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Railway Age

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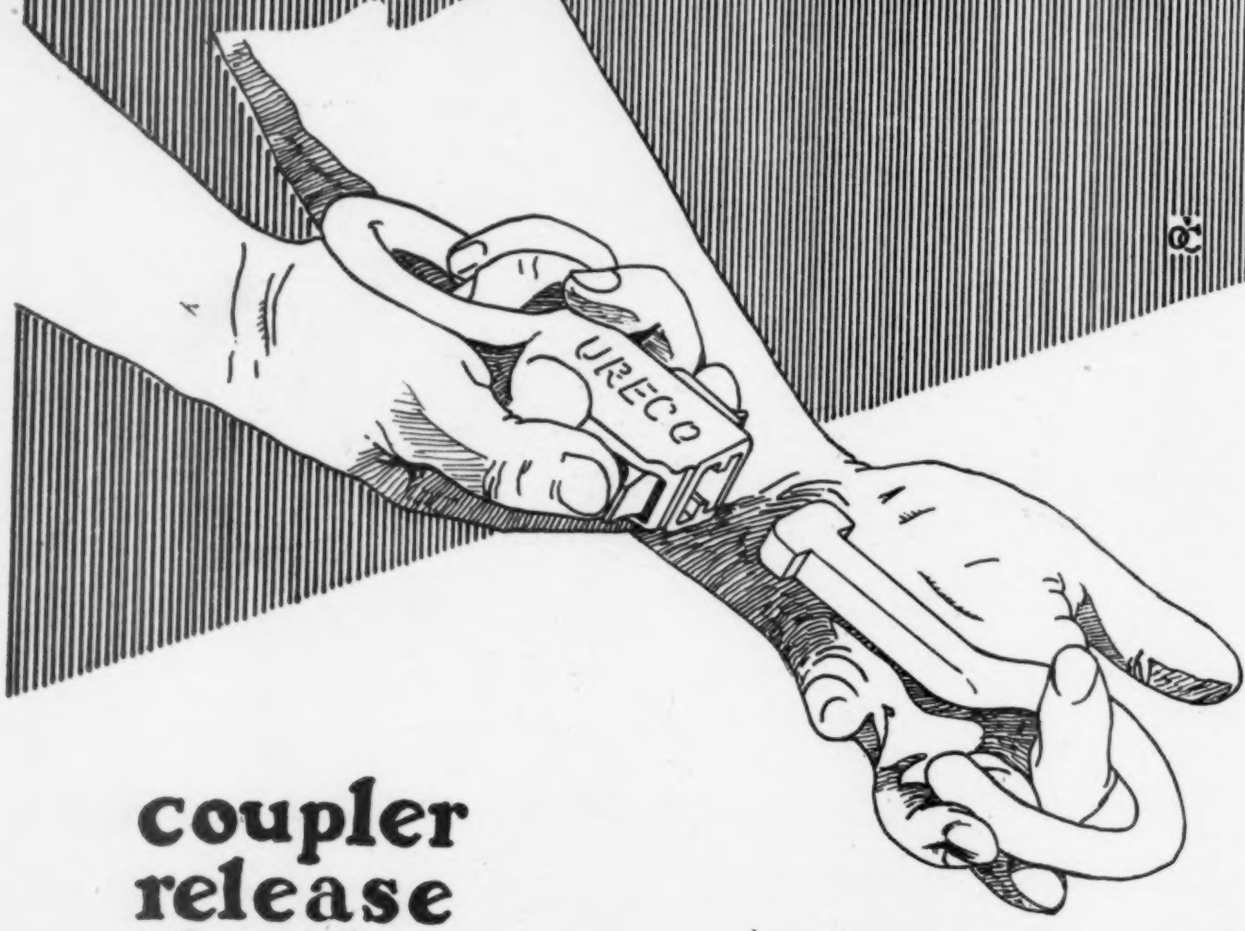

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EDITORIAL

Railway Age

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Changing the roadway instead of trying to change the habits of drivers is a method of promoting safety at highway crossings which has found favor with some railroad officers, as well as with various theorists. To what extent is anything of the kind practicable, safe and economically justifiable? Why not have a referendum on the question? Referenda are popular nowa-days in various civic fields. To keep on forever discussing the subject and printing pictures, letters and committee reports may result in nothing but floods of words. A properly worded referendum, if responded to by city engineers, railroad commissioners and railroad engineers and managers *in signed letters* might afford some definite information of actual purposes as distinguished from academic opinions. A prominent railroad engineer some time ago proposed, with careful attention to detail, a hump in the highway, to compel low-speed. An eastern railroad has considered seriously the construction of 24-in. serpentine walls at the side of the highway to accomplish the same object. A correspondent of the New York Times reports favorably on roughened roadways, which he has seen in New England; the highway is hard and smooth *except* in the 300 ft., more or less, approaching the railroad. This section of road is kept in repair but is left rough enough to make every autoist slacken speed. There is a definite need for a country-wide study, or review, by competent engineers, which shall collate and clarify the desultory proposals of various kinds. The optimistic ideas of the young enthusiast and the practical knowledge of the chief engineer, who is responsible to the city's or the railroad's treasury, must be accommodated to each other, or be made consistent, if possible; this is necessary if any satisfactory progress is to be made.

Enforced Low-Speed for Automobiles

Emphasis is rightly placed on the need of handling locomotives quickly through repair shops and engine terminals in order that they may be returned to revenue service as soon as possible and also that the labor cost of repair operations may be minimized. Continual pressure for reduced shop operating costs, may, however, be productive of highly undesirable results unless it is also made clear that the quality of material and workmanship entering into the repair of locomotives is now and always will be of first importance. This point was strongly emphasized by H. T. Bentley, general superintendent of motive power and machinery of the Chicago & North Western, in addressing the International Railway General Foremen's convention held at Chicago, September 9 to 12. Mr. Bentley said: "Thoroughness in doing necessary work to locomotives in shops will probably reduce the shop output somewhat but materially improve the service and decrease the cost of enginehouse maintenance. Slovenly and improper work increases failures on the road and is not economical notwithstanding records of low costs in the shops." In other words, it is not so much *how quickly* locomotives can be put through repair shops, but *how long* these locomotives will stay in service after leaving the shops. Obviously the attitude of shopmen, gang leaders and foremen toward the quality of their work is a reflection of the attitude of the general foreman, shop superintendent and higher mechanical officers. There are always some men in every large shop organization who will do just as poor work as they think will pass the inspector and be accepted by their foreman. They will frequently cover up errors such as inaccurate lining of shoes and wedges, poorly fitted binders, loose frame bolts, etc., which may later cause continual trouble on the road after the locomotives have been placed in service. If any shop management places its record for output ahead of its record for thorough going, reliable repairs, inferior locomotives are bound to be turned out.

Too Rapid Locomotive Repair Work

The Board of Railway Commissioners of Canada on Monday of this week began hearings on a most important rate case, arising out of the restoration to its full effect of the famous Crow's Nest Pass Agreement on July 7 last. This agreement, which was discussed in detail in the *Railway Age* of October 13, 1923, page 673, and developments concerning which have been noted from time to time in our news columns, provides for certain low maximum rates on the Canadian Pacific in the Prairie provinces of Canada. This agreement was suspended following the war because of its disastrous effects on railway revenues. Later, due to persistent agitation, the rates were restored in part and, as noted herein, the agreement was allowed to come again into full effect on July 7. Naturally it has been necessary for the Canadian National, although not a party to the agreement, to offer the same rates at competitive points as those which the agreement forces on the Canadian Pacific That the results are disastrous to railway revenues goes without saying. The railways have, however, quite properly insisted upon a literal interpretation of the provisions of the agreement; specifically, the Canadian Pacific has put the rates into effect only on its lines which existed at the time the agreement was made and the Canadian National has applied the lower rates only at competitive points. The present hearings arise out of the effort of communities which do not enjoy the lower rates to have them applied generally in Western territory. A decision favorable to these petitioners would, of course, be extremely serious for the Canadian railways. As far as the Canadian National is concerned, the people of Canada, who under normal conditions might expect a steady decrease in the burdens which its deficits now place upon the public purse, would have to resign themselves to paying perhaps even larger deficits for many years to come—taxation of all the people of Canada to pay the transportation bill of those fortunate enough to live in the West. When rate discrimination such as that engendered by the application of the Crow's Nest Agreement exists, there are two methods of correcting it. One is by the general lowering of rates everywhere to the basis it provides for certain districts, regardless of whether the railroads can bear the burdens placed upon them or not. The other is by a straightforward facing of the problem, the complete abrogation of the agree-

All Eyes on Canada

ment with its discriminatory low rates and the setting up of a rate structure everywhere which would be fair to all alike and which at the same time would provide a living wage for the railroads. The eventual outcome of this case may indicate whether or not political expediency or sound economics is to dictate the future fiscal policy of Canada and its treatment of capital invested in legitimate enterprises. Canada's need for more capital is almost as important as her need for more population—perhaps equally or more so. Neither dollars nor pounds sterling are likely to go where they are sure of mistreatment.

I. C. C. Denies Certificates for New Railroad Projects in Texas

IT is probable that few have fully appreciated the extent to which the Interstate Commerce Commission, in the exercise of the power conferred by the Transportation Act to grant or withhold certificates of public convenience and necessity for new railroads and extensions, has been preventing unnecessary speculative railroad construction in territories where it would tend to divert traffic from existing established lines, many of which now have an insufficient traffic, and in cases where the announced plans of the promoters indicate in its opinion unsound financing or even almost certain loss to those who would be induced to invest in the projects. During the past year the commission has denied applications for certificates covering projects for hundreds of miles of new line, some of which could without much difficulty be characterized as "wild-cat" schemes, but it has also passed on many cases in which a decision was not so easily arrived at.

In some cases in which there has been room for a reasonable doubt as to the success of a proposed line or as to the extent to which it would afford additional service to the public as contrasted with the extent to which it would prejudice existing lines by diverting traffic from them, there has been much disagreement among the commissioners and dissenting opinions have been written. In the recent case of the Wenatchee Southern, which was granted a certificate for the construction of a line along the Columbia river between Wenatchee and Kennewick, Wash., after the commission had decided that apparently the earnings in prospect would be insufficient for some time to sustain the project as an independent enterprise, five of the eleven commissioners dissented. In most cases, however, the decisions granting or denying certificates for new construction have been issued without dissent, which means that the commission allowed them to be made by Division 4, which now consists of Commissioners Meyer, Aitchison and Potter, having special supervision over the commission's Finance Docket.

Recently the commission has been called upon to determine whether the public convenience and necessity require the construction of a large amount of projected new mileage in Texas, involved in several different projects, and has turned its thumbs down as to the greater part of it for somewhat different reasons in each case. Its reports in three of these cases, which were all decided on September 4, were made public on September 15 and, taken together, furnish an excellent illustration of the kind of questions the commission is called on to pass upon and of what is being accomplished under this new power. In the one day the commission, while granting a certificate for the building of 40 miles of new line from Three Rivers to Fowlerton, Tex., by the San Antonio & Mexican, a company organized in the interest of the San Antonio, Uvalde & Gulf, denied the authority sought by the same company for a line from Fowlerton southerly to Mirando, 74.4 miles, and a branch line to Laredo, 55.3 miles; also one asked by the San Antonio Southern for an extension of its existing line from Christine to Rio Grande City or Samfordyce which would serve much the same territory as the line of the San Antonio & Mexican. It also denied the application of the Nueces Valley, Rio Grande & Gulf for a line from Beeville to Laredo, about 135 miles. On August 30 the commission granted a certificate to the Rio Grande City for a line of 22 miles from Samfordyce and it now has before it a report from its attorney-examiner and engineer-examiner recommending a denial of a considerable part of an application for an extension of the Waco, Beaumont, Trinity & Sabine totalling 114 miles. The application was for a line of 100.26 miles from Livingston via Beaumont to West Port Arthur, a belt line at Beaumont of 2.23 miles, and a marine facilities line of 12.16 miles near Port Neches. The examiners recommended against the latter line and that part of the proposed extension from a point near Port Neches to West Port Arthur. Texas is a large state and has plenty of room for more railroads but the commission and its examiners apparently believe that the public would be better served if some of the roads already there had more traffic and consequently more money to spend.

The line which the San Antonio & Mexican was authorized to build is intended to serve as a connecting line and cut-off between two lines of the San Antonio, Uvalde & Gulf, at the same time developing some local business and thus increasing the traffic of the Uvalde, which has never paid any return on its investment, with a view to making the latter self-sustaining. Stockholders of the Uvalde had agreed to underwrite the securities by which the line would be financed and the commission expressed the opinion that the local business might probably suffice, together with the savings on through business via the cut-off, to pay a fair return on the investment. However, as to the line from Fowlerton to Mirando and the branch to Laredo, the report said, "it is hardly shown that the investment proposed is likely to yield a fair return; and much more than half of the estimated revenues would be merely diverted from existing railroads which receive a small traffic and an adequate return on their book investment."

Also, having before it at the same time two applications for lines to Laredo to participate in the anticipated increase in traffic with Mexico through that gateway, the commission remarked that "as there are two railroads reaching Laredo on the Texas side and only one on the Mexican side of the Rio Grande, it would hardly seem necessary to provide a third railroad on the Texas side to handle traffic that passes over the one line in Mexico."

The San Antonio Southern, which was denied permission to carry out its plans on the ground that both its line and that of the San Antonio & Mexican are not needed in the same territory and that as between the two the Three Rivers-Fowler project has the greater merit from the standpoint of public service, now owns and operates a line from Kirk to Christine, 38.7 miles, and also operates over the International-Great Northern from Kirk to San Antonio, 15.9 miles.

As to the Nueces Valley, Rio Grande & Gulf the commission said: "The record fails to establish that its construction would increase through business from Mexico or Laredo, or that the applicant would be able to develop enough local business and to divert enough of the existing traffic to make its line self-sustaining. The absence for most of the route of definite surveys, the proposed method of financing the introduction of a construction company of unknown functions, which would probably include the right to locate the line, and the intention or desire to have the line operated by another company, are circumstances that tend to cause doubt as to the probability that the road would be well located or constructed."

Under the practice which the Interstate Commerce Com-

mission has adopted for many of its Finance Docket cases hearings were held for it by the Railroad Commission of Texas, but the Texas commission made no recommendations as to any of the three projects just mentioned. Objections were made in each case, however, by the other lines operating in the territory involved. The three reports were made by Division 4 and a note in each stated that Commissioner Meyer did not participate in the disposition of the case.

Consideration of some of these construction certificate cases raises the question whether, if so much regulation of railroads had not seemed necessary, the people to be benefited by new railroad lines might not perhaps be willing for a while to pay such rates as would take away some of the uncertainty as to their financial success, or at least give the investor a chance of a speculative profit that would justify some risk. But that is another story, and incidentally it has been found that the unsuccessful investors are not the only ones who lose when a railroad once built later finds itself unable to meet its expenses.

Expert Opinion on Farm Conditions and Freight Rates

SOME TIME ago the National Council of the National Economic League voted that the subject of "agriculture and the farmer presented one of the paramount problems for consideration at the present time." It then organized a special committee of experts to study the causes and remedies of the condition of agriculture. This committee consisted of fifty members. It included fifteen professors of agriculture in universities throughout the country. It also included editors of farm papers, managers of farmers' co-operative organizations, practical farmers and other men who have devoted themselves to intensive study of farm problems. About twenty states were represented.

A questionnaire was submitted to all the members of this committee asking them to state specifically their opinions as to the causes and the remedies of the unsatisfactory condition of agriculture. It is hardly necessary to tell readers of the *Railway Age* that for some years the country has resounded with attacks made upon the railways by politicians upon the ground that the principal cause of the inability of farmers to make money has been excessive rates upon agricultural products. In view of this fact, it is interesting to consider the views regarding the condition of agriculture expressed by the experts composing the special committee of the National Economic League.

Thirty-six of them stated what they regarded as the causes of the condition of agriculture and their statements have been published in "The Consensus," the official organ of the National Economic League. Twenty-one stated what they believed to be the chief cause. Of these, five said that it was lack of organization of farmers; one, that it was land speculation; seven, that it was the disparity between the prices of farm products and other commodities; one, that it was the tariff; three, that it was over-production of farm products; two, that it was the European situation, and two, that it was fluctuation of the dollar. Not one of them said that the chief cause was high freight rates. Furthermore, while eight members of the committee mentioned "excessive transportation costs" as one of the causes, the rest did not mention freight rates at all.

Thirty-two men gave their views on the remedies for the condition of agriculture. Only six of these mentioned lower transportation rates. Twenty-one of them suggested better marketing agencies, seven tax reduction or readjustment, and six better credit facilities. Other remedies suggested were control and diversification of production, rehabilitation of Europe, better rural educational systems, more efficient farming, etc.

The facts given show that the experts differ widely from the politicians. None of the experts believes that railway rates are the principal cause of the condition of agriculture and less than one-fourth of them believe that they are even one of the causes.

Apparently the replies to this questionnaire were written before the recent large advances in the prices of certain agricultural products. Late developments in the agricultural field are indicated by a bulletin, entitled "Better Times," which was issued by the Bureau of Agricultural Economics of the United States Department of Agriculture on September 1. This bulletin says, among other things: "Movement of wheat has been heavy and accomplished with no little credit to the railroads." It also gives some statistics regarding the prices of farm products at the farm in July, 1924, which it is interesting to compare with railway rates. The average freight rate on farm products is now about 50 per cent higher than it was in 1913. The farm prices of the following products in July, 1924, were the following percentages higher than they were in 1913:

	Per cent
Cotton	120
Corn	65
Wheat	35
Potatoes	70
Butter	37
Wool	105
Apples	64
Eggs	41
Lambs	73

The average wholesale price of all farm products was 41 per cent higher than in 1913.

The average hourly wage of railway employees is about 136 per cent higher than it was in 1913. It has increased more than two and one-half times as much in proportion as the average freight rate. The bulletin of the Department of Agriculture already mentioned shows that in July, 1924, the average wage of farm labor employed monthly without board was 59 per cent greater than in 1913. Therefore, the average wage the farmer is paying for labor has increased less than one-half as much in proportion as the average railway wage, and it has increased much less in proportion to the average increase in the prices of farm products than has the average wage the railway is paying in proportion to the increase in its rates.

If the railways could reduce wages at the present time to a point only 59 per cent higher than they were in 1913, which would put them on the same relative basis as farm wages, they could reduce their pay roll one billion dollars a year.

Senator LaFollette is being supported in his candidacy for president by the railway labor leaders. He is seeking the votes of both railway employees and farmers. In his own private platform he demands that the freight rates on farm products be reduced at once to the pre-war basis. Do the farmers think that they are treating their own labor fairly by paying it wages 59 per cent higher than before the war? If so, how can they consistently believe that it would not be reasonable for the railways to reduce the wages of their employees to only 59 per cent above the pre-war basis and thereby reduce their pay roll and their operating expenses a billion dollars a year? If the railways could save this much in operating expenses, they could reduce all freight rates on farm products to the pre-war basis and make reductions in other rates of more than a half billion dollars.

The *Railway Age* is not advocating this or any other reduction in railway wages. We have given the above figures to show how utterly inconsistent it would be for railway employees and farmers to vote for LaFollette at the same time. How can railway employees think it is consistent, when their average hourly wage is 136 per cent more than

before the war, for them to join in a political campaign to secure reductions of freight rates for farmers who are paying only 50 per cent higher freight rates and 59 per cent higher wages than they did before the war? How, on the other hand, can farmers think it is consistent for them to pay only 59 per cent higher wages than before the war and at the same time join with railway employees, whose average hourly wage has been increased 136 per cent, in support of a candidate who takes the position that railway wages should not be reduced, but that railway rates, which have been increased only 50 per cent, should be reduced?

Whose Ox Is Gored?

WARREN S. STONE, formerly grand chief of the Brotherhood of Locomotive Engineers, and now its president in charge of its various banking, coal mine, and railroad investment enterprises, reputed to be receiving a salary equal to that of the president of many a sizeable railroad, seems to have acquired some ideas in his new capacity as a capitalist somewhat at variance with those he expressed as an active labor leader. In a letter to John L. Lewis, president of the United Mine Workers, as given to the press a few days ago by Mr. Lewis, Mr. Stone explained his refusal to sign a wage contract with the miners for the coal mines in West Virginia owned by members of the Brotherhood under the name of the Coal River Collieries Company, on the ground that "the members of the Brotherhood of Locomotive Engineers who have invested $3,000,000 in these properties are entitled to some return on their investment, yet at the price at which coal is now selling, and the cost of mining under the Jacksonville agreement, it is impossible for the union mines to break even."

Railroad officers can readily sympathize with Mr. Stone in such a situation. However, we recall that while testifying before the House Committee on Interstate and Foreign Commerce in advocacy of the Plumb plan bill in 1919 Mr. Stone said "it is a question whether capital is entitled to any return," and we have some recollection of several occasions when his brotherhood has insisted with some vigor that locomotive engineers were entitled to standard rates of pay regardless of the ability of the railroad concerned to earn any return on its investment.

It is not hard to understand the slight shift in position from that of a labor leader whose principal business was to seek increases in wages to that of a representative of those capitalists among the locomotive engineers who have saved enough from their wages to invest in banks, mines and railroads and to apply to the Interstate Commerce Commission for authority to issue stocks and bonds and certificates of public convenience and necessity. The difficulty lies in reconciling the change with the fact that the same individual is also prominently identified at this time with a campaign to elect one Robert M. La Follette to be President of the United States. If Senator La Follette should be elected, and in the course of time should also accomplish his announced desire to have the government own the railroads, he might conceivably be faced sooner or later with a dilemma similar to that confronting Mr. Stone. We refer to the problem of how to earn some return on the government's investment of the public's funds while paying the wages asked by the labor organizations, together with an additional problem as to how to reduce freight and passenger rates at the same time. (We take it that Mr. Stone is not now worrying himself especially about how to reduce the selling price of coal.)

La Follette, with his usual foresight, has long ago solved these problems to his own apparent satisfaction, yet Mr. Stone does not seem to want to follow the formula. To reduce rates without reducing wages, and perhaps while even raising them, La Follette proposes simply to reduce the valuation on which the return is to be based to what he calls the "prudent investment." If Mr. Stone's followers, under his leadership, have invested $3,000,000 in coal mines and some short pieces of track on which to transport the coal to a railroad that can take it to the consumers of coal, at a time when the market price of coal was high, why not write down the $3,000,000 to a prudent basis? Or, better still, if the price at which coal is selling is fixed at an extortionate figure by a wicked monopoly, as La Follette also claims from time to time, why not pay the standard wage to the miners, sell the coal to brotherhood members at actual cost, and let them take their saving from the elimination of the monopoly profit? That is about the method which La Follette and Stone are advocating in this campaign as a means of improving the condition of the working man, as against the old-fashioned way of saving a part of his wages and participating later in capitalistic profits.

What Are the Requirements of Steel Bridge Specifications?

EFFORTS to secure the adoption of existing specifications for steel bridges as "American standards" under the auspices of the American Engineering Standards Committee, which have been pursued during the past year, appear to have been unsuccessful. The underlying reasons for the failure of this project need not be discussed here, but some thought may well be given to criticism of the specifications for steel railway bridges of the American Railway Engineering Association entirely aside from their consideration as an American standard. It has often been said that they are too voluminous, that they go into too much detail and leave too little to the judgment, or engineering sense founded on experience, of the competent structural engineer.

This criticism may well be considered in the light of the history of these specifications, which represent more than 20 years of painstaking work, as well as the motives which led to the organization of the A. R. E. A. itself and which have dominated the work of all its committees. The association has worked consistently for the improvement of practices in the construction and maintenance of railway tracks and structures, first, by a determination of the best practices through the agency of the committees and, second, through their adoption by the association for inclusion in the manual whereby they may serve as a guide to the officers on the various railways.

Since the membership of the association consists almost entirely of engineering officers in responsible charge of work on the railways, the thought underlying the work of the various committees in fulfilling the objects of the association has been to meet the needs of the man on the job. So, in the case of specifications for the design and construction of steel railway bridges, the effort has been to provide answers to the questions that come up in the daily work of the bridge engineer and his assistants, to settle disputed points of design and to provide specific rulings covering the many points of controversy between the railways and the contractor in the fabrication and erection of bridges.

The railway bridge engineer is beset with an enormous volume of administrative work. He finds, therefore, that he cannot devote his time very largely to decisions on the moot points of design which come up in the drafting room from day to day or to the fine points of workmanship with which his inspectors are constantly confronted. It is natural, therefore, that the railway bridge engineers who have participated in the drafting of the A. R. E. A. steel bridge

specifications have endeavored to cover in these specifications as many as possible of the disputed points which have come up in the course of their combined experience in order that they may be settled once for all. In other words, they have endeavored to develop what is in effect a manual of good practice as well as a specification, and which should, therefore, prove of great value to them in the effective conduct of the work of their departments.

The result has been a set of specifications containing 289 articles, truly a formidable document. It is the product of many years of work. Commencing with an original draft of much smaller compass, the additions have been made from time to time according to the dictates of experience and judgment, but only after exhaustive discussion. It is not the contention that the specifications are infallible. Certain of the provisions, no doubt, are open to question. But in form, at least, the specifications appear to serve the needs of the railroad, whether it be a large property with an extensive bridge organization or a small road on which the bridge engineer is only infrequently confronted with some of the diversified problems which he must be prepared to meet.

The Would-Be-Standard Invoice Form

IT IS THE general practice for the railroads to furnish the invoice forms used by the railway supply houses and similar concerns for the rendition of bills for material. The reason for this is that each railroad has its own ideas about what information it desires shown on such bills and concerning the arrangement of such information. One result of the present procedure is that practically no two of the invoice forms are the same. This means that the invoice clerks in the railway supply houses must be familiar with an endless variety of different forms.

The great variety is an inconvenience. It decreases the output of the invoice clerks and it complicates the methods necessary for the recording of the data on the supply house's own books. Naturally, any increased accounting cost borne by the supply company is in the long run included—just as any other of its costs of doing business—in the price which the supply company must charge. A supply house selling to a large number of railroads has to have on hand a supply of each road's invoice forms; it is reasonable to expect that the waste of printed matter must be great. Inasmuch as the railways supply the forms, such waste is the railway's loss.

This situation points to the desirability of a standard form of invoice that could be used by the supply houses and would be considered acceptable by all railroads alike. Such a standard form has been prepared. It was decided upon only after considerable study in which particular effort was made to retain in the standard form the advantages of any of the present individual forms. It was intended, in other words, that there would appear on the standard form space for any of the information that may be required on any of the variety of forms at present used by railroads or other large purchasers of goods or by sellers of goods in various lines of industry. The form has been officially adopted as a standard by no less than four important associations—*i.e.*, the National Association of Purchasing Agents, the National Association of Cost Accountants, the Railway Accounting Officers' Association, and Division IV, Purchases and Stores, American Railway Association. The form has been designated R.A.O.A. Standard Form 201, Invoice Form.

It would seem that when four associations of such standing as these officially adopt a standard form, admitted to be needed as much as this one, something might come of it. But there has been practically nothing done, notwithstanding that the official action of the associations was taken in May and June, 1922, or over two years ago. A few of the railway supply companies have attempted to put the new form in use but have found that the railways still prefer their own forms. There was no opposition to the adoption of the new form and, to the best of our knowledge and belief, there has been no criticism of its arrangement or content. One must conclude that it is mere inertia—such as is sometimes found in large business organizations—that has delayed progress in this instance.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Agriculture Year Book 1923. Issued by U. S. Dept. of Agriculture. See Index under "Transportation." 1284 p. Pub. by Govt. Print. Off., Washington, D. C. $1.25.

British Railways, 1825-1924. *Why Nationalisation is Inevitable,* by A. Emil Davies. 39 p. Pub. by Railway Nationalisation Society, London, Eng. Sixpence.

Handbook of Railroad Information. Issued for the use of the officers and employees of the Louisville & Nashville Railroad Co. Summarizes outstanding features of present railroad situation. 89 p. folding table. Pub. by Louisville & Nashville Railroad Co., Louisville, Ky.

Problems in Business Economics, by Homer B. Vanderblue. See Index under "Railroads," "Carloadings," and "Freight Rates." 631 p. Pub. by A. W. Shaw Co., Chicago, Ill. $5.00.

Proposal by O. P. and M. J. Van Sweringen for the Unified Control and Operation of the Railroads of the New York, Chicago and St. Louis Railroad Company, the Chesapeake and Ohio Railway Company, the Hocking Valley Railway Company, Erie Railroad Company, Pere Marquette Railway Company. Deposit Agreement Annexed. 20 p. Pub. by Van Sweringen Brothers, Cleveland, Ohio.

Thirty-Sixth Annual Report of the Statistics of Railways in the United States for the Year Ended December 31, 1922. Prepared by Bureau of Statistics, U. S. Interstate Commerce Commission. Includes selected figures for 1923 also. Popularly known as the "I. C. C. Blue Book." 475 p. Pub. by Govt. Print. Off., Washington, D. C., $1.50.

Traffic Glossary, by R. E. Riley. New edition of definitions of technical traffic terms and abbreviations used in traffic publications. 142 p. Pub. by LaSalle Extensions Univ., Chicago, Ill.

Periodical Articles

Analyzing Nickel Plate Merger. United States Investor, September 13, 1924, p. 2199-2205.

Railroads in Fashion Again. Comment on recent developments. American Review of Reviews, September, 1924.

Story of the New York Central, by Charles Frederick Carter. First of a series on history of American railroads. Editorial comment, p. 20—"Nobody can read the stories of the great transportation enterprises of this country without feeling that the centennial of the American railroad is indeed a centennial worthy of celebration on a magnificent scale." Shipper & Carrier, September, 1924, p. 6-10.

Transit Facilities in the Age of Innocence, by Arthur Chapman. Illustrated with photographs of old locomotives that pulled the "rapid transit" trains in the early days of New York City transportation. New York Herald-Tribune Magazine, September 14, 1924, p. 3.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

Real Life of Night Dispatchers

SAN FRANCISCO, Cal.

TO THE EDITOR:

The article by "Professor" on the "positive meet" was so unfair to roads where there are few open offices at night, that I deviated from my usual policy of making no reply to criticisms of my published views; and, having begun, I must answer D. A. J., whose letter you printed on August 23.

I leave it to others to decide as to my verbosity and lucidity. Passing over other minor points, which might weary the reader, I still contend that any system of dispatching which inhibits the use of conditional meeting points arranged for under "run-late," "right" or "wait" orders would not prove successful on the principal roads west of the Missouri river.

Look at a single illustration: There is a subdivision 116 miles long, two heavy grades, 15 intermediate stations, only two of which are kept open at night. Trains must reduce to six miles an hour over two bridges which are being rebuilt; must not exceed 20 miles an hour over 15 miles of track in one place and 35 miles an hour for four miles at another place where the track is rough. Westward odd numbered trains are superior by direction. No. 4, a first-class train, scheduled at 20 miles an hour, was reported one hour and ten minutes late and losing time. No. 1, another first-class train, scheduled at 43 miles an hour, was reported 45 minutes late. An eastward freight train having 54 cars of grapes was reported to arrive at Z at 9:00 p. m. Another eastward freight having 28 cars of sheep and 22 other loads was expected at Z at 10:30 p. m. The local freight left Z at 6:30 p. m. and had to do switching or supply sectionmen and agents with water at twelve points. A westward freight was called to leave A at 11:30 p. m. to handle 100 empty refrigerators. Another regular westward fast freight was due to leave A at 12:15 a. m., but it was uncertain when it would get started. There were four helper engines to be cared for. The dispatcher was handling 500 miles of single track.

These trains were moved under "run-late," "right" and "wait" orders with a delay of only 15 minutes to passenger trains and a maximum delay of one hour to freights. Will D. A. J. kindly inform me how he would go about moving the trains as well by arranging only positive meets, either by rule or by train order? I am not from Missouri, exactly, but having been born in a state adjoining that glorious domain I shall have to be shown.

I well remember a dispatcher who had always worked where there were open offices at practically all sidings, coming to Wyoming to dispatch trains on the Union Pacific. He was something of a fiddler and always kept that instrument at hand. He sat in the dispatcher's office at Green River from eight o'clock in the evening until midnight (at which time he was to sit in) rendering beautiful, although mournful, melodies, much to the annoyance of Frank McPhee who was trying to pull out what little hair he had left on his head in an effort to get a half dozen fruit extras over a 134-mile single track district within the six-hour limit; also to the disgust of the call boy who habitually curled up in a corner of the office with his dog to sleep when not needed to call crews. Earlier in the evening this new dispatcher had remarked that we were sadly behind the times in attempting to move trains as was being done; that much better results would obtain, time could be conserved and the work greatly simplified by giving only "meet" and "run-ahead" orders.

After midnight he gave us an object lesson by attempting thus to run trains. Things ran smoothly enough until the trains began to arrive at meeting points fixed at blind sidings. After that his troubles were over for the rest of the night, for many of the trains which were to be met were tied up at other non-communicating points awaiting trains which stubbornly refused to arrive. As I remember, five crews tied up under the hours of service law. This dispatcher tarried only long enough the next morning to remark that rather than dispatch trains in that territory he would get a tin bill and pick chaff with the chickens; then he tucked his violin under his arm and faded away. Not quietly, however, for he fell a victim to the serpent in the Blue Goose saloon.

HARRY W. FORMAN.

Commends Railway Age Position on Classification

WASHINGTON, D. C.

TO THE EDITOR:

I write to endorse the position taken by you on page 356 of the *Railway Age* for August 30, 1924, in the matter of the revision of the Classification of Operating Expenses of Steam Roads.

You ask the question:

"Does not the situation as it stands with reference to this important factor further justify the *Railway Age* in its stand that the Commission and the Railway Accounting Officers' Association should make haste slowly in any revision of the operating expense classification?"

It seems to me that your position is justified, and you are entitled to commendation for the constructive manner in which you are treating this problem. The subject of the revision of the operating expense classification is so important as to warrant your suggestion that the commission should "make haste slowly."

I also call your attention to the resolution passed by the American Railway Engineering Association at its last convention in Chicago on March 13, 1924, said resolution being printed on page 59 of Volume 25 of the Proceedings of that association. This resolution is sufficiently important to warrant quoting it in full:

"RESOLVED: That the American Railway Engineering Association, in convention assembled, looks with deep concern upon the proposed revision of operating accounts of the railroads.

"Economy of maintenance of way and structures is dependent upon such detailed accounting as will provide a record of the cost of doing different classes of work common to all carriers, and such records should be kept in a uniform manner to permit of comparison of such costs between the different operating divisions of a railroad, and between different railroads, and we further feel that such uniform records are necessary to permit the Interstate Commerce Commission to properly apply the requirements of the Transportation Act."

You will note that this association, which is composed of 2,000 leading railway engineers of America, has taken the position that uniform, complete and accurate operating cost records are necessary in order to meet the requirements of the Transportation Act. I think this position is sound, and I wish to commend your paper for the advanced position which it has taken on this important question.

EDWIN F. WENDT,
Consulting Engineer

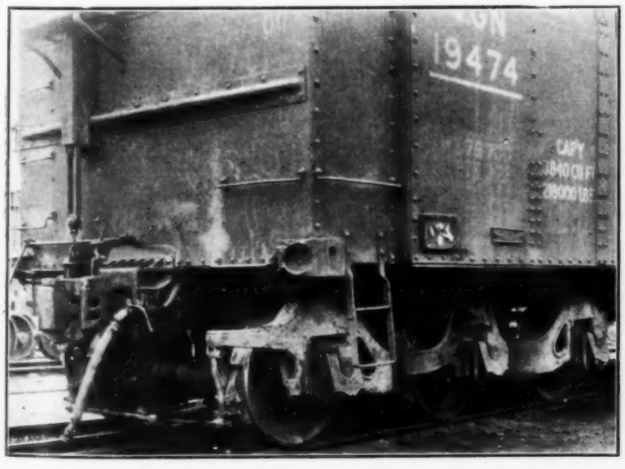
Gondola Car of 120 Tons Capacity Used for Testing the Boyden Co-ordinating Six-Wheel Truck

Improved Co-ordinating Six-Wheel Truck

The New Boyden Design Has Been Simplified in Order to Reduce Maintenance Expense

SATISFACTORY TESTS have recently been completed by the Boyden Steel Corporation, Baltimore, Md., on a set of demonstration six-wheel trucks of the co-ordinating type. These trucks, in which are embodied a number of improvements over those described in the April 21, 1923, issue of the *Railway Age,* were placed under a Virginian railway gondola car of 120 tons capacity. This car was placed in service last May and was in continuous use since that time for carrying coal from the Pocahontas fields in West Virginia to tidewater at Sewells Point, Va.

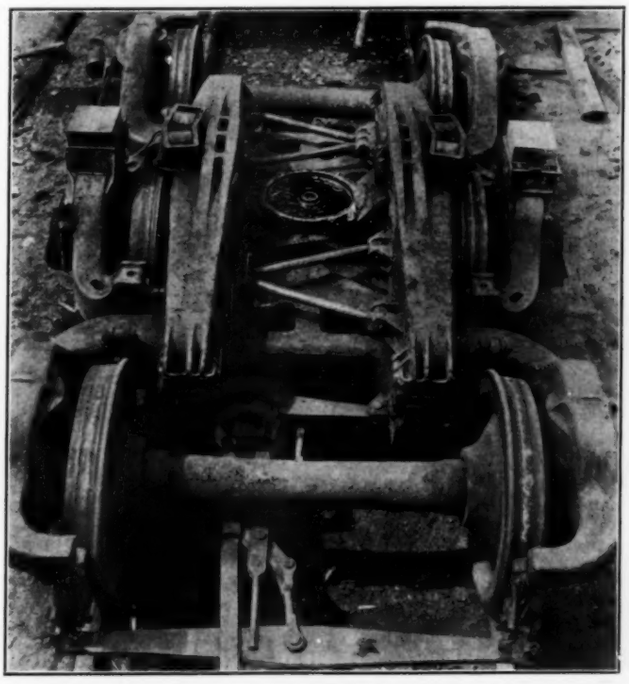
The improved truck, which is known as type C-2-S, is the result of development work initiated by John C. Boyden in 1919. Tests were first made on a full sized truck at the Camden Iron Works, Camden, N. J., to determine its action in passing around various curves. This truck, which was intended for a 120-ton capacity freight car, weighed 22,000 lb., but by making a number of modifications in the design, the weight was reduced to 19,600 lb. Trucks of this type were placed under a 100-ton capacity coal car belonging to the Chesapeake & Ohio, and tests were made in 1920 and 1921 at the plant of the Cambria Steel Company, Johnstown, Pa. These tests resulted in further improvements and a third design was tested out over the Baltimore and Cumberland divisions of the Baltimore & Ohio. A brief account of these tests is also included in the article in the *Railway Age* which described the earlier model.



All Parts of the Truck Are Designed with the View of Facilitating Inspection

Purpose Is to Reduce Curve Resistance

The purpose of the Boyden co-ordinating truck is to reduce curve resistance and to permit greater vertical flexibility. This is accomplished by a construction which permits the wheels and axles to assume their normal relation with the track under all conditions.



Top View of the Co-ordinating Six-Wheel Truck

Fig. 1 shows a plain view of the understructure of this

truck. The two end frames *A*, to which the end wheels are applied through a pedestal type spring which supports the journal boxes, carry the bolster reactions to a center frame *B* through a ball and socket joint *C*, located on the longitudinal center line of the truck. The bolster reactions are transmitted first to the end frames *A* at the points *D*. The longitudinal location of the bolster reaction, points *D*, is such that equal loads are carried on the three axles. It will also be noted that the end frames *A*, which are integral castings, have a three-point support.

Fig. 2 shows an inverted plan of the articulated bolster. Rockers of manganese steel are interposed between the reac-

Fig. 1—Plan View, Showing the Frame Construction

tion points *D* of the bolster and those of the end frames *A* in order to eliminate friction.

The bolster, composed of three main members, is so designed as to allow maximum vertical flexibility, combined with horizontal rigidity, which prevents longitudinal displacement of the two parallel beams with respect to each other. This condition is secured by use of triangulated ties *V* hinged at their ends to the longitudinal beams by means of the common I-bar construction.

The center bearing bridge *E* carries the center plate load

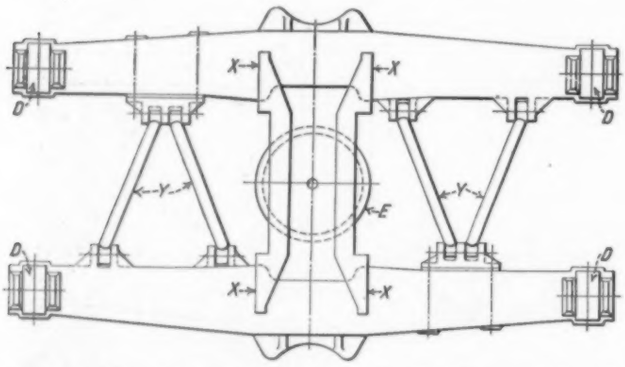


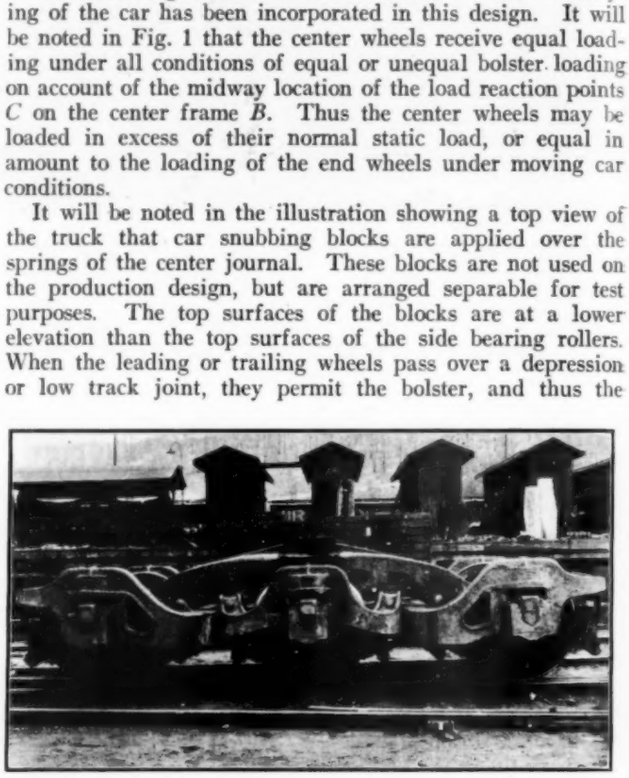
Fig. 2—Triangulated Ties Hinged at the End Prevents Longitudinal Displacement of the Parallel Bolster Beams

of the car. This member projects vertically downward and straddles the center axle. In passing through the center frame *B*, the parallel surfaces *X* of the bridge are located with a minimum clearance between these and similar surfaces on the center frame *B*. Thus it will be seen that the transverse axis of center frame *B* is maintained at right angles to the longitudinal axis of the bolster, as well as to the track. When on a curve the center wheels are offset with respect to the end wheels; a transverse movement must, therefore, be provided for of the center frame. This is permitted by sliding the relative surfaces *X* of the center frame and bolster bridges and is limited only by the contact of the bridge *E* with the center frame. Sufficient clearance at this point is provided for the trucks to negotiate a curve with a 65-ft. radius.

New Design Includes Additional Features

An interesting feature aimed to eliminate excessive swaying of the car has been incorporated in this design. It will be noted in Fig. 1 that the center wheels receive equal loading under all conditions of equal or unequal bolster loading on account of the midway location of the load reaction points *C* on the center frame *B*. Thus the center wheels may be loaded in excess of their normal static load, or equal in amount to the loading of the end wheels under moving car conditions.

It will be noted in the illustration showing a top view of the truck that car snubbing blocks are applied over the springs of the center journal. These blocks are not used on the production design, but are arranged separable for test purposes. The top surfaces of the blocks are at a lower elevation than the top surfaces of the side bearing rollers. When the leading or trailing wheels pass over a depression or low track joint, they permit the bolster, and thus the



Side View of the Boyden Truck, Showing the Construction of the Frame and Bolster

truck side bearing on that side, to drop with them, thereby removing car support on that side. The center wheels, which are 5 ft. from the end wheels, are on level track. At the instant that the side bearing support of the car is removed and the car starts to roll to that side, the chafing plate of the snubbing block comes in contact with the car floor and arrests the movement of the car before it accumulates any appreciable momentum. In a very short increment of time, the leading or trailing wheel is again on level track and the side bearings steady the car as the center wheel in its turn drops into the rail depression. This feature has been found to reduce the car oscillation at critical speeds to a marked degree, and without overloading of the center journals.

The Design May Be Varied to Suit Conditions

The Boyden trucks, from the nature of their construction, can be designed for a maximum wheel base. The demonstration trucks are equipped with wheels having a total wheel base of 10 feet. This produces a satisfactory distribution of the load to the rails, roadbed and structures.

It can be seen from the side view of the truck that all of the important parts are accessible for inspection. This is an important feature of the truck and can be appreciated by those who have the responsibility of safe operation of cars. The clasp brake rigging is also as easily accessible as the main members of the truck. Shoe replacements can be made without removal of the dependent parts and can be accomplished without unnecessary loss of time.

The four main members of the truck are self-interlocking

and require no bolts, pins or rivets to complete the assembly. Springs located over the journal boxes cushion the rail impacts before these depreciating forces enter the truck structure and thus retard crystallization of its cast steel members.

The following advantages are claimed for this truck:

1—Safe operation under abnormal loading and truck conditions secured by a snubbing of the car oscillation and thereby obtaining better vertical equalization with the attendant elimination of the hazard of lifting wheels.

2—High speeds are made possible for modern freight cars of greater capacity.

3—The curve resistance is reduced to a minimum due to the frame construction which permits all the wheels to adjust themselves to the curve, with a corresponding reduction in drawbar pull and reduced wear on the wheels and rails.

4—Equal flange and tread wear on all six wheels is obtained owing to the radial position assumed by the axles on curves.

5—Better distribution of rail loading is secured by the greater wheel base with an attendant reduction in maintenance cost.

6—The main members of the truck, center frame, two end frames and complete bolster are composed of four self-interlocking parts which require no bolts, rivets, or pins in their assembly.

7—All parts are designed with the view of facilitating inspection in order to reduce the hazard of unseen faults and fractures.

8—The clasp brake rigging is of a simple special design and all parts are visible for proper inspection and maintenance. Replacement of brake shoes can be made without removal of any of the dependent parts.

Freight Car Loading

WASHINGTON, D. C.

REVENUE FREIGHT CAR LOADING continued to increase during the week ended September 6, although because of the Labor Day holiday the total for the week, 920,979 cars, was less than that for the week before. If the loading had been at this rate for a full six-day week it would have considerably exceeded that of the previous week, when over a million cars were loaded for the first time this year. The total was only 7,937 cars less than that for the corresponding week of last year and was 97,732 cars greater than that for 1922. Loading of grain and grain products, 65,310 cars, represented an increase of 17,997 cars as compared with last year and was only 3,527 cars less than the record-breaking figure of the week before. Loading of miscellaneous freight also showed an increase of 14,976 cars as compared with the corresponding week of last year and coal loading was comparatively heavy for a week that included a holiday. Last year's figures were exceeded in five of the seven districts, the Eastern, Pocahontas, Southern, Central Western and Southwestern. The summary as compiled by the Car Service Division of the American Railway Association is given in the table in the first column.

REVENUE FREIGHT CAR LOADING—WEEK ENDED SEPTEMBER 6, 1924

Districts	1924	1923	1922
Eastern	202,850	198,562	192,539
Allegheny	180,372	197,077	183,965
Pocahontas	43,345	40,452	25,122
Southern	131,716	125,802	107,818
Northwestern	143,200	159,725	133,708
Central Western	151,373	144,644	130,987
Southwestern	68,123	62,654	49,108
Total Western districts	362,696	367,023	313,803
Commodities			
Grain and grain products	65,310	46,764	47,313
Live stock	32,773	35,136	29,498
Coal	149,473	153,022	139,207
Coke	7,268	13,540	8,378
Forest products	62,570	66,266	51,456
Ore	45,949	71,699	53,937
Merchandise, l.c.l.	217,844	217,673	202,635
Miscellaneous	339,792	324,816	290,823
Total	920,979	928,916	823,247
August 30	1,020,339	1,092,150	923,806
August 23	982,248	1,069,915	879,902
August 16	952,888	1,039,938	846,266
August 9	942,198	973,750	842,690
Cumulative total January 1 to date	32,477,590	34,084,372	28,430,948

The freight car surplus continued to decrease in the period August 23-30 to a total of 231,677 cars, including 111,254 coal cars and 89,154 box cars.

The Canadian surplus was 26,025 cars, including 22,700 box cars.

Car Loading in Canada

Revenue car loadings at stations in Canada during the week ended September 6 totaled 47,593 cars which, owing to the Labor Day holiday, showed a decline from the previous week of 4,368 cars, of which 3,925 were in the Eastern division and 443 cars in the Western division. Grain and coal loadings in the Eastern division were maintained and in the Western division grain loading was increased. Compared with the same week last year the car loading was lighter by 4,956. The cumulative totals to date show 1924 loadings 96,105 cars above 1923.

TOTAL FOR CANADA

Commodity	For the week ended 1924 Aug. 23 Cars	Aug. 30 Cars	Sept. 6 Cars
Grain and grain products	3,869	3,977	4,159
Live stock	2,620	2,722	2,149
Coal	4,777	5,502	5,163
Coke	206	171	237
Lumber	3,601	3,528	3,185
Pulpwood	1,727	1,736	1,566
Pulp and paper	1,917	1,853	1,777
Other forest products	2,345	2,180	1,950
Ore	1,588	1,408	1,424
Merchandise, l.c.l.	15,063	15,584	14,106
Miscellaneous	13,175	13,294	11,868
Total cars loaded	50,888	51,955	47,593
Total cars received from connections	28,270	28,809	25,341
Total cars loaded for corresponding week, 1923	53,947	57,056	52,549
Comulative loading to date—1924	....	....	1,900,581
Cumulative loading to date—1923	....	....	1,804,476

Block Signal Mileage Statement

THE INTERSTATE COMMERCE COMMISSION has issued its annual bulletin, prepared by the Bureau of Safety, showing the mileage of railroad in the United States operated under the block system on January 1, 1924; together with data concerning the use of the telephone for the transmission of train orders.

The total length of railroad in the United States operated under the block system was 105,902 miles; 41,537 miles automatic and 64,365 non-automatic. As compared with the preceding year this shows an increase of 1,471 miles automatic and 1,287 miles manual, a total increase of 2,758 miles.

The bulletin, like those of former years, contains detail tables showing the total mileage, single track, double track, etc., operated by the block system, kinds of signals, various practices, and other data as reported by each road. This treatment of mileage figures results in a considerable duplication as there are numerous long stretches of road which are operated jointly by two or more companies, and are reported by each company. This makes a fictitious increase in the total mileage for the country.

A table in the introduction to the bulletin gives the notable changes as compared with January 1, 1923. This tables appears at the top of the following page.

A supplement to table No. 2 which tabulates the mileage of the different kinds of automatic signals in use, shows a

total of 2,167 miles of road on which color-light signals are exclusively used (day and night) and 227 miles on which position-light signals are used. The latter item consists of 13 miles on the Lehigh Valley and 214 miles on the Pennsylvania. Roads using color light signals on more than 100 miles of line are:

Increases in Block Signaling in Twelve Months

Name of road	Automatic	Non-automatic	Decrease non-automatic
Atchison, Topeka & Santa Fe	245.5	....	20.7
Atlantic Coast Line	37.8	....	7.1
Central of Georgia	76.8	....	....
Chicago & Eastern Illinois	56.0	....	56.0
Chicago & North Western	11.0	....	11.0
Chicago, Burlington & Quincy	172.4	....	161.3
Chicago Great Western	25.3	....	25.3
Grand Trunk	11.4	....	11.4
Great Northern	358.4	....	5.7
Illinois Central	124.5	....	....
Yazoo & Mississippi Valley	19.6	....	....
Illinois Traction	16.2	....	....
Minneapolis, St. Paul & Sault Ste. Marie	....	410.2	....
Missouri-Kansas-Texas of Texas	28.4	....	....
Missouri Pacific	10.2	....	10.2
Northern Pacific	229.9	....	239.6
Pennsylvania System	38.6	631.9	....
Philadelphia & Reading	....	16.0	....
Seaboard Air Line	....	593.7	....
Southern Pacific System:			
Morgan's L. & T.	....	12.3	....
Pacific System	89.1	....	89.1
Ulster & Delaware	....	79.3	....
Wabash	....	72.2	....

	Miles
Atchison, Topeka & Santa Fe	182
Chicago, Burlington & Quincy	142
Chicago, Milwaukee & St. Paul	196
Great Northern	352
Illinois Central	165

The total mileage of light signals has increased during the year 838 miles. Several hundred miles in this table are made up of the mileage of electric and interurban roads.

Ten roads report the use of automatic stops, as follows (all items except the St. Louis-San Francisco being classed as double track):

Name of Company	Miles
Buffalo, Rochester & Pittsburgh	12.9
Chesapeake & Ohio	21.0
Chicago & Alton	13.8
Chicago & Eastern Illinois	106.0
Chicago, Rock Island & Pacific	165.4
Hudson & Manhattan	9.0
Pennsylvania	69.5
St. Louis-San Francisco	5.8
San Francisco-Oakland Terminal	3.8
Union Pacific	8.0

The length of railroad on which the telephone is used for the transmission of train orders aggregates 131,329 miles which is 3,009 miles above the total of January 1, 1923; and the telegraph is still used on 132,661 miles. This figure is 3,499 miles greater than that reported the year before. Many roads report both the telephone and telegraph in use on the same section of road.

Collision at Avon, Oregon

The Interstate Commerce Commission has issued a report, dated August 27 and signed by W. P. Borland, director of the Bureau of Safety, on a collision on the Spokane, Portland & Seattle, at Avon, Oregon, on July 10, which was due to mental failure of the engineman.

Eastbound passenger train No. 22, holding an order to meet westbound passenger train No. 29 at Avon, and to take siding, did not stop and enter the siding, but proceeded at full speed along the main track, and collided with No. 29, which was between the switches, moving slowly; and both locomotives were overturned and badly damaged. All of the cars in both trains were of wooden construction and several were badly damaged. A brakeman of No. 22 was killed and three passengers and two other employees were injured. Engineman Walch of train No. 22 had been ill with influenza, and his neglect to enter the side track was due to a mental lapse or disability. Concerning this the report says in part:

"Engineman Walch stated that early in the year he had been ill with influenza and did not work from the 9th of February until the 11th of May. When he reported for duty he did not visit the company's physician, as he felt that he was in proper condition to resume work, but reported to the master mechanic. Since then he had at times felt weak but he attributed this principally to nervousness; on one occasion about three weeks before this accident, while on duty in the locomotive cab his sense of location deserted him, but he quickly recovered and thought perhaps it was due to his eyesight as he had previously had some trouble with glasses. On the evening before this accident his wife commented upon the fact that he was rubbing his eyes and the back of his head, but he attributed this to the fact that he had probably been reading too much. He stated that he felt all right when he went on duty on the morning of the accident. He received and thoroughly understood train order No. 115, after which two station stops were made. At both of these points he felt dizzy, and at Mayger where he experienced some difficulty in reversing the engine for the purpose of taking slack, he felt a pain as though something were pulling in the back of his head. After leaving Mayger he remembered whistling for and passing through a tunnel located about 1½ miles east of that point, but he did not remember passing Pyramid, a station just east of the tunnel, nor anything that occurred between that point and the point of accident. He stated that everything seemed like a dream and it appeared as though he were looking at a bright light; the next thing he knew was that he was falling, and when he regained his senses he was crawling out from under the baggage car after the accident had occurred. He further stated that he read train order No. 115 aloud to Fireman Swenson and then passed it to him, but that with the exception of matters pertaining to their duties he and the fireman never conversed, and even when at times he was ill on the locomotive he did not tell the fireman of his condition as the fireman was a peculiar man and difficult to talk with; it has not been Fireman Swenson's habit to call his attention to orders or meeting points. Chief Surgeon McDaniel stated that he saw Engineman Walch at the scene of the accident at about two o'clock (four hours after the collision) and he appeared to be in a somewhat dazed condition, apparently having difficulty in recognizing him. A physical examination conducted afterwards disclosed that Mr. Walch was anæmic and somewhat lacking in blood cells, and indicated a lowered amount of resistance both nervous and physical. This is a condition that frequently follows influenza; it may develop within two or three weeks or it may be two months, but it comes in nearly every case. This condition of lowered resistance would make a man more susceptible to fainting spells or mental lapses. With reference to the statement of Engineman Walch that when in his dazed condition he appeared to see a bright light, Dr. McDaniel stated this could not come from the eye itself but probably resulted from some congestion of the brain. . . ."

In the conclusion of the report it is stated that the fireman on No. 22, who is a qualified engineman, was fully aware of the meeting point and could have prevented the collision. Even when he saw the other train he took no action to apply brakes although the speed of the train was excessive. The conductor could not say definitely whether the proper signal had been sounded approaching the meeting point; and it is held that if he had been alert and mindful of the rule he could have taken proper steps to avert the collision.

The report refers to the derailment at Readville, Mass., on September 11, 1923, where an engineman had been suffering from a mental disability. Engineman Walch was last subjected to a physical examination on March 7, 1921, when his condition was pronounced good. Had he been examined recently his defective condition, says the report, might have been discovered.

Co-operation Is a Great Impulse of the Heart*

Constitutes an Extra Thing Not Included in the Labor Contract—Cannot Be Paid for with Money

By Ward W. Adair
Executive Secretary, Railroad Branch, Y. M. C. A. of New York

IT FREQUENTLY HAPPENS that one must have recourse to Holy Writ when he is in search of the best philosophy on some important phase of life. If this competition suggested the entering of an epitome instead of an essay, the present writer would submit this nugget from the world's greatest sermon: "And whosoever would compel thee to go with him a mile, go with him two." The joyous willingness of two parties to a contract to go that extra mile, is the very heart of co-operative effort. The first mile alone represents drudgery. All the glory and all the satisfaction come with the second mile. Compulsion exacts its stint, but there is no "must" in co-operation. Within the first mile lie duty, rules, wages, orders, and the problem of making a living. Within the second mile—the voluntary mile—lie mutual thoughtfulness and consideration, generosity mutually practised, good team-work, and all that glorious overage that marks the difference between a company of drafted men and a group of devoted volunteers. By far the most important phase of mileage on the railroad is the subject of the second mile.

I.

A prominent man, who recently accepted a post in which the element of human relationships was a prominent factor, was receiving some advice from one of his acquaintances. "You are going to have labor troubles, of course," remarked the counselor, "you can make up your mind to that. Labor is a commodity, and you must treat it as such. It is a commodity, just the same as wheat." That man was only twenty centuries behind the times. Labor is not a commodity at all. Labor is the human factor by which ideas, backed by brains and capital, are converted into achievements.

It is a fundamental mistake to conceive of the problem of labor and capital as something sordid or material. The problem is not primarily material, it is primarily spiritual. It is not a thing that has to do fundamentally with work and wages, it is a matter of human relationships. Its greatest integral factor is not dollars, but the personal equation. It cannot be solved with superficial schemes or wage increases, for its solution lies rather along the lines of mutual and sacrificial interest, inspired by a kindly and friendly spirit between the parties concerned.

There appeared in the metropolitan papers a few days ago, a most significant advertisement. A southwestern railroad offered a bond issue to the public, and the two financial institutions underwriting the offer, were the National City Company, the investment branch of the largest financial institution in the United States, and the Brotherhood of Locomotive Engineers' Co-operative National Bank. Can anybody doubt that tremendous possibilities are involved in such a step as that, and that it may mark a rapprochement between the railroad brotherhoods and the carriers, such as few of the present generation ever expected to see? We need every such common meeting ground between capital and labor as we can discover. We need every means of working together for the common good that human ingenuity can devise.

II.

Co-operation in any enterprise is founded upon mutual confidence. Let a group of men become inspired with confidence in the leadership of an organization and team-work is the natural result, as surely as the sermon follows the text. The co-operative spirit is frequently seen at its best in a small organization where a group of subordinates have an inherent belief in their chief, and work with him untiringly, and with sacrificial loyalty, because they believe in him, and in the things he is trying to get across. A large organization differs from a small one numerically, but not in principle. The greatest single factor in producing ideal conditions in a large organization is a personality. Given an outstanding leader, a magnetic and dominant and kindly man who inspires confidence and loyalty, at the head of an organization, and you have the first great factor that makes for success.

Says a recognized authority, "Co-operation is manifested by a vivid interest in one's occupation, by a desire to be of service, and to make good for one's firm, and by anxiety for its fame and prosperity. It means attention concentrated on one's task, honest endeavor, thought for improvement, team-work, and the spirited exertion which courage and loyalty stimulate. . . . The supposed right of the master to exact devotion from his employees, is a remnant of the feudal status of labor, which has not yet been completely effaced from the mind of the old-school employer. . . . Co-operation constitutes an extra thing which is not included in the contract of labor. The extra effort is such an altruistic expression of human nature that it cannot be paid for with money. . . . Co-operation is not merely an honest discharge of one's obligations; its scope is much broader and higher. It implies a common understanding of the ideals to be pursued. A willingness to give another right service, and readiness to receive his service in return."

Thus we see that by no stretch of the imagination can co-operation be thought of from one side only. The railroad company that has co-operation for its goal of endeavor, should be constantly asking the question, "What in addition to wages, does the railroad company owe to its employees?" For, if one expects the little extras that are the mark of excellence, he must pave the way for this condition with the bestowal of similar extras. If he expects his men to be high in their ideals toward the company, he must see to it that the company is high in its ideals toward the men, and that they always set the example in such virtues.

III.

Co-operation, to be a success, must be worked up mutually. It cannot be superimposed from the top, for the obvious reason that there is too much suspicion down below. It must, therefore, be a process of education and promotion, resulting from a conviction on the part of all concerned that a policy of working together is for the best interests of all, as well as for the best interests of the enterprise in which both are engaged. It must recognize that both parties have a common interest, and that they also have something to protect from assaults from the outside.

One trouble with the human relationships question on the railroads in the past has been the lack of ideals. All the reforms of history have been born out of dissatisfaction with prevailing conditions, and a conviction that better things were possible. In the railroad business, there has been too much of a tendency to say, "Oh, well, it has always been so,

* Entered in the *Railway Age* competition on co-operation.

and it always will." Just as long as men are satisfied with conditions as they are, just as long as they believe that nothing better is possible, no progress can be attained. It is when the conviction sweeps over the souls of men that there are infinitely better things within easy reach that the great forward movements of the world are born.

The human element on the railroad is intensely human. The writer heard a long paper read at a railroad gathering not long ago, on the subject of "Relationships." Not once in that dissertation did the minor official, who was the author of the paper, grasp the outstanding truth that the human element is human. He appeared to regard the rank and file on the railroad as an insensate mass to be utilized by the company as it might utilize a gravel bank, or a pile of ties. Infinite harm is done by such utterances, for as the speeches are circulated among the rank and file, the workers are embittered by what they regard as an unfair presentation of their place and importance in the railroad world.

IV.

Our dreams of co-operation will never be realized by addresses of officials before Rotary Clubs, shippers' dinners, or any extraneous group. Frequently, instead of doing any good, these addresses are resented, when read by the rank and file, because they often present the shortcomings of organized labor, and the shortsightedness of the rank and file, with an air of superiority that is disliked by the men. Rest assured, co-operation will never come until it comes as a corollary of an era of good feeling and mutual confidence, established through the unselfish friendly contact of officials with the men of all grades of the service.

The lack of co-operation is not the fault of the men, and it is not the fault of the officials. It is the fault of both. They have repeatedly gone at the problem from the wrong angle, and we can no more solve it in any cheap or superficial way than we can solve an algebraic equation with a multiplication table.

The Relationships Conference has great value and possibilities. These conferences are arranged by some organization within the zone of agreement, and interested experts from outside the railroad world meet with the local railroad brotherhood leaders one day, with company officers the next day, and with a dinner for the united groups the second evening. It has been found that both of these groups readily respond to an invitation to engage in such a friendly conference. The matter of wages is not discussed. The conference occupies itself entirely with the consideration of human relationships, and the betterment of existing conditions. Valuable counsel is received from both of these groups, and distinct benefit has been received wherever the idea has been tried out. "Come, now, let us reason together," is an excellent platform for men who are engaged in a common enterprise.

V.

The solution of this problem is one of the most expensive tasks that confronts the railroad men of today. It is expensive, not in money, but in the sacrifice of personal comfort in a sustained educational endeavor, in a patient working toward a clearly defined end. There are some questions that can be solved with a twenty-five dollar check, but this is not one of them. Here is where the check-book is utterly impotent, and where only a living personality can meet the need. Without advertising, without ostentation, but with invincible good will and quiet persistence, the men concerned in the railroad problem must translate into life that incomparable precept, "Whatsoever ye would that men should do unto you, do ye even so unto them."

A disastrous wreck occurred on a great railroad to the north of us. On a bitter winter night, the second section telescoped the first section, and the dead were laid out in windrows in a little Railroad Y. M. C. A. building up in Maine. The coroner's jury brought in that all too familiar verdict, "Man Failure." A flagman had deliberately failed on duty. He had been weighed in the balance and found wanting.

Four weeks later a stranger sat in the reading room of that same Association building, and after a while tactfully worked himself into the conversation of a group of eight or ten railroad men off duty. "By the way," said the stranger, "I happened to read of that terrible wreck here a few weeks ago. What seems to be the opinion of the men in regard to it?" For a half hour he did not utter another word, but listened attentively to the various expressions of opinion. The men were agreed that the flagman had been culpably negligent, and that indirectly, disgrace had been cast upon the morale of the entire working force of that railroad company. Then the stranger interjected another question. "What would there be to hinder a program, coming from you men, that would deal in a direct and vital way with this question of man failure, in all of its various forms? Do you not owe it to your families, and to your own good name to take this situation in hand, and carry out a program that would go a good deal deeper into the question than anything that has yet been attempted? You might call it 'The second section of safety first,' making it deal with all the problems of the human element, and attacking some of the great foes of railroad morale, such as disobedience to orders, carelessness, drunkenness, thieving and disloyalty. Suppose a man could be found who would be competent to go up and down the line and talk with little groups such as this, with the men and their families in their homes, and perhaps at times with larger groups, in an effort to work out a real program of betterment of human relationships. What would you think of such an idea?"

As one man, that group expressed unqualified approval, and there was born a plan, that within the next twelve months, worked a great change in the mental attitude of that railroad system.

VI.

Another railroad took up the idea, but expanded and perfected it to a degree that had not been attempted at the first trial. This enterprising company engaged a thoroughly trained man whose experience included a term of years as a passenger brakeman, and another term as a Railroad Y. M. C. A. secretary, to spend about three weeks at each division point, talking in a heart to heart way with little groups, and with men in their homes, in reference to the betterment of human relationships. This ambassador of friendliness carried his message to thousands of railroad men and their families, and the response was of the finest kind. The subjects discussed included:

(1) Responsibility. The necessity of placing duty above everything else for the sake of a man's life and position, that of his fellow employees, the lives of passengers, and the protection of property.

(2) Truth. Real manhood embodies a willingness to tell the truth, even though it be told at times to a man's own disadvantage.

> "To thine own self be true,
> And it must follow as the night the day,
> Thou canst not then be false to any man."

(3) The right use of time when off duty. "The problem of a man's temptations, is the problem of his leisure time." It is important that facilities be provided for the pleasant and profitable use of leisure time in order to combat evil forces that are always at work.

(4) Doing away with adverse criticism. One of the worst vices of the railroad service is the "knocking" that so often characterizes careless conversation. Talk up the things you

can commend, instead of talking down the things you are tempted to criticise.

(5) Clean living and clean speech. Loose habits of speech incite to loose methods of living. These can be counteracted by the formation of right habits. "The best way to get rid of a bad habit is to form a good one."

(6) Honesty. A few thieves bring reproach on a large number of honest railroad men. No honest man can be passive in the presence of such an evil as thieving, but must do his part to help catch the thief.

(7) Sobriety. The worst enemy of successful railroad operation is alcohol. No man has a right to try to operate a train or an engine when his mind is befuddled by strong drink.

(8) The "get-together" idea. The frequent meeting of officers and employees in friendly contact as a means of fostering mutual understanding, and of forming personal friendships.

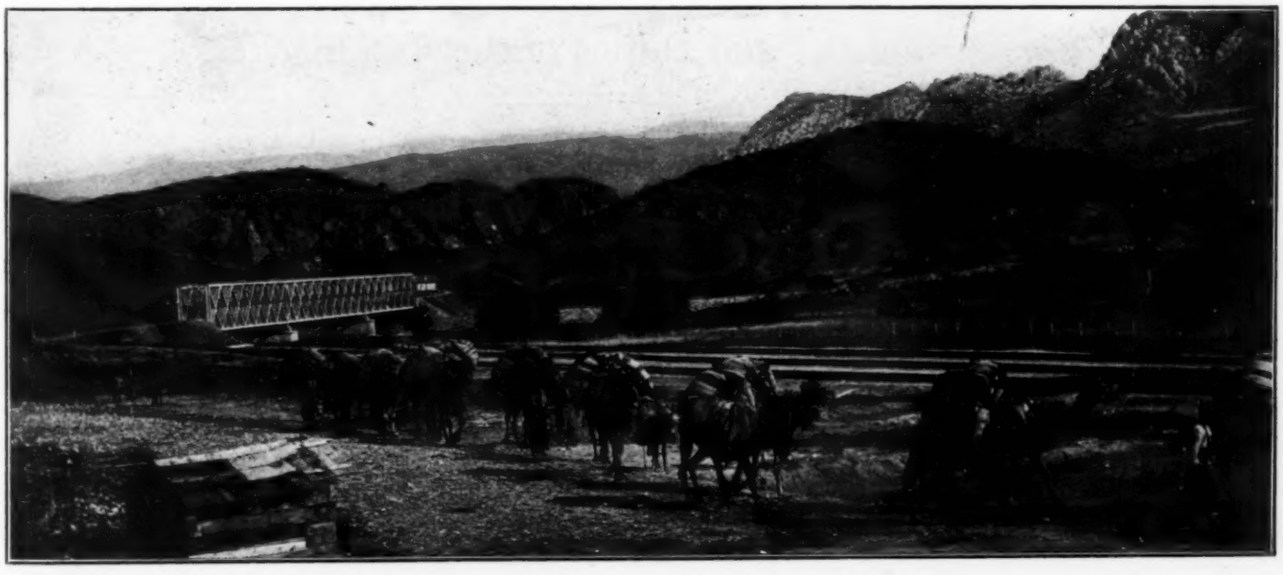
(9) The Veterans' Association. The promotion, among men who have been at least fifteen years in the service, of an organization, with a program for the betterment of human relationships. The constant endeavor on the part of the older men to exert a proper influence on the young men coming into the service. Frequent meetings of the Veterans' Association for the consideration of constructive programs, as well as for outings and entertainments intended to promote "the family spirit" on the railroad.

This program which was energetically promoted for about twelve months, was interrupted in some of its phases, temporarily, but the work is still going on, and inquiries have recently been put out with a view to securing the services of the same man to carry forward and complete what was so well begun. That such work is at least a step in the right direction, will hardly be disputed, even by the most confirmed pessimist. When combined with careful personnel work, with special reference to safeguarding the railroad occupation at its source, such a program, honestly applied, cannot help leaving its mark on the consciousness of both officers and men in the ranks, and the spirit of harmony and co-operation is bound to improve steadily. As this work culminated on the system above referred to, one of the largest theatres in a great city was secured for Sunday afternoon, and one of the most notable "Get-Togethers" in the history of transportation was held. The program was preceded by a great reception in which the officers and their families met the men and their families in delightful social fellowship. The spirit that pervaded that meeting was the kind that all right-thinking railroad people, whether in the ranks or higher up, would like to see dominant in the transportation world. There is no copyright on the idea. With the right kind of preliminary work, it can be repeated anywhere.

VII.

Hand in hand with this kind of a program should go a policy of generosity on the part of the company toward its men. It is idle to attempt to promote co-operation from one side; in fact, that is not co-operation at all. The best expenditure of money a railroad can make is to provide amply for the comfort and welfare of its employees while they pursue their daily vocation out on the line. Treat the men handsomely, and you will be handsomely treated in return. No crowd of men respond more quickly to generous and fine treatment than the railroad men. No men more earnestly desire the better day in the railroad world than the knights of the cab and caboose. And nothing will more quickly enlist their co-operation than the confident feeling that, up at headquarters, there are men who think of the little provisions that can be made for their comfort while they are "boring holes in the night," or while they are making the long layover away from home.

The relationships between men and men are the most precious and spiritual matters in the world. You cannot work them out by mechanical and forced efforts. They can only be worked out in the human heart, but once you solve a question in that realm, you have won a lasting victory. The conquering of prejudices and sharp opinions is a vastly greater triumph than can be achieved by the instrument of force, either by labor or capital. Co-operation is a great impulse of the heart, not a thing that can be superimposed. It must come with spontaneity and mutual enthusiasm, or it will not come at all. It will come not by undue emphasis upon material things, but by earnest endeavor in spiritual things. It will come by the pathway of good will, when kindly railroad officers, and friendly knights of the iron trail, embrace every opportunity to get together in wholesome fellowship, where they endeavor to understand each other's problems, and where they join hands for the working out of their great enterprise.



The New and Old in Transportation in Turkey

Roadmasters at the Central of New Jersey Pier at Sandy Hook, N. J.

Roadmasters Hold Successful Meeting in New York

A Well Balanced Program on Practical Subjects Was Presented at 42nd Annual Convention

THE FORTY-SECOND ANNUAL CONVENTION of the Roadmaster's and Maintenance of Way Association, which was held at the Commodore Hotel in New York City on Tuesday, Wednesday and Thursday of this week was the most successful in the long history of that organization in the practical character of the reports presented, in the interest in the sessions and in the number of railway maintenance officers present. While the program consisted in large part of reports of committees on various track maintenance subjects, it was supplemented by papers on the Economics of Track Maintenance by G. L. Moore, engineer maintenance of way of the Lehigh Valley; The Marking of Steel Rails by C. W. Gennet, Jr., manager rail inspection department, Robert W. Hunt Company, Chicago; Rail Laying Methods of the Canadian Pacific by E. Keough, assistant engineer maintenance of way, Eastern Lines, Canadian Pacific, and the Roadmasters' Responsibility for the Protection of Grade Crossings, by F. W. Hillman, division engineer, Chicago & North Western Chicago.

In addition, some of the broader phases of the railway transportation problems were presented in addresses of W. G. Besler, president of the Central Railroad of New Jersey, R. H. Aishton, president of the American Railway Association, and W. J. Backes, assistant general manager of the New York, New Haven and Hartford.

These reports, papers and addresses are abstracted below and on following pages.

The various sessions of the Convention were presided over by J. B. Martin, general supervisor of track, New York Central Lines West of Buffalo, Cleveland, Ohio, president of the association.

In calling the convention to order on Tuesday morning, Mr. Martin emphasized the importance of the efficient conduct of maintenance of way work to the successful operation of the railways and the importance of transportation itself to the industrial life of the country. He stated that there is a constantly increasing demand on the railroad plant for more production with the same facilities and that this responsibility for the construction and maintenance of tracks must be very fully shared in providing a structure which will carry increased loads and a greater number of trains safely.

Responsibilities and Duties of the Roadmasters

By W. G. Besler
President, Central of New Jersey, New York

In 44 years of active railroad life I have had personal experience with almost all of the positions from that of an employee and then a subordinate officer, to that of the chief executive of a railroad. Naturally I have come to know the relative worth and value of each of the component parts and departments of the complex organization required for the successful functioning of railroad operation.

I am addressing today a body of practical railroad men for whom I have always cherished the greatest love and respect, because, either of their own selection or natural causes which brought it about, they are occupying the difficult and very often unpleasant service of performing the hard and dirty work which the job implies.

Who goes out, more often by night, in a bleak, wintry wind with its drifting snow, and cleans the switches and keeps the road open? The roadmaster.

Who hastens to the scene with accumulated section and bridge man, or an extra gang, to meet and deal with a fire and a burn-out? The roadmaster.

Who is called out of bed and told by telephone or the call-boy that there is a washout and traffic at a standstill, and who goes by handcar or work train to the scene to repair the damage? The roadmaster.

Who goes to the office on Sunday mornings to see if everything is well? The roadmaster.

Who is called upon and generally makes proportionately the largest contribution when the order goes out to reduce expenses? The roadmaster.

Who among subordinate railroad officers has the highest percentage of injury and death from motor car and other accidents? The roadmaster.

Who makes possible a speed in safety of 75 miles per hour for an express train? The roadmaster.

The Highway Grade Crossing Problem

It seems to me most apropos at this time to consider the matter of highway crossings at grade and the ever increasing number of accidents, many of an appalling character, which have come to pass. The roadmasters build and maintain highway crossings at grade. They erect and keep in position the statutory warning signs as required by law, and generally, except perhaps in those cases where electric devices or other similar appliances are maintained by the signal department, they are responsible for conditions at those crossings and in general practice they provide the crossing watchmen.

In the days when old "Dobbin" was the means of propulsion of the buggy or wagon, the speed of travel was in itself a protection against accident, and in addition thereto old Dobbin with his horse sense pricked up his ears and, by signs of apprehension, gave an indication of the approach of a train. Not so with the situation as it is today, with the multitudinous automobiles for pleasure and traffic, as well as the large and commodious autobusses which compete with the railroads for passenger traffic.

An entirely new situation has come to pass in a remarkably short period of time—a situation for which the railroads are in no wise responsible. We are running our trains upon the only place we have for them, i. e., upon the rails and the new condition to which I refer has been created by the public who are so loudly demanding the elimination of grade crossings, or their protection day and night by gates and gatemen.

Newspapers, editorially and with glaring headlines and reading matter, are commenting upon the "death traps" maintained by the railroads. Who made them "death traps," why are they "death traps" and to what extent can the railroads be held responsible for the conduct of the driver of an automobile? Responsibility ordinarily implies *control,* yet I know of no law which has been passed or proposed which gives the railroads any control over the conduct of an autoist.

True, some might say that by closing the gate we may control his actions. If crossing gates furnished an absolute panacea, the situation might not be so bad. But not a day passes but that an autoist, through carelessness or because of faulty brakes, crashes into a crossing gate, and oftentimes through the gate and into the side of the engine or train, and at the coroner's inquest great effort is usually made to place the responsibility upon the watchman.

It takes two to make a quarrel, and, generally speaking, it takes two to make an accident; and again, generally speaking, the motorist comes within the category of the aggressor.

Now what are we going to do about it?

A Condition Created by the Public

The demand for crossing elimination and the demand for crossing gates and gatemen to meet a condition created *by* the public, for the safety and protection *for* the public, and *of* the public—calls for the expenditure of hundreds of millions of dollars, and, in my opinion, should be shared by those for whose convenience, comfort and safety it is provided, namely, *the public.*

Some states have passed laws providing in the case of grade crossing elimination, for the state, county or city to bear a proportion of the expense. Other states place the entire expense squarely upon the railroads, which are running their trains no faster than under previous conditions and, as I have said, cannot absolutely control the speed of the motorist who is the occasion of the collision.

The solution of the matter can be very much expedited if a healthy public sentiment can be created which will bring home to the people of this country that the railroads have reached the point where they can no longer carry an increasing burden of taxation such as has been fastened upon them.

The railroads of this country are paying in taxes upwards of one million dollars per day, and these taxes are in many cases being used to construct concrete highways alongside, and upon which auto trucks and other commercial vehicles are traveling without expense, except for an insignificant cost for license, etc., in active competition with the railroads.

What the railroads need is not more laws but an enforcement of the present laws, and an abatement of the flood of hundreds of bills which sweep into the national and state legislatures, and an assurance that the tax burden already enormous will not be increased, but that this burden may perhaps be lessened. It is to the interest of every one of us to see that this is done. If you men in your various communities will exercise the influence which I believe we all have, I think we can in time make a dent in the situation and get people to thinking right on this subject.

Report on When to Eliminate Work Trains

The elimination of work trains must not be secured by substitution that will be more costly or hazardous; neither should it be the cause of necessary work being left undone.

The utilization of local train service is one method of substitution which can be used profitably on single or double track lines where material can be unloaded outside of the tracks and where other operating conditions are favorable. Naturally their use is limited. The loading and unloading of carload, or part carload lots, of nearly all classes of material, such as ties, ballast of all kinds, small consignments of relay rail, small track fastenings and material for repairs to road crossings and platforms, can be handled by local freight. Carload lots of material for distribution on various sections can be handled readily by local trains by billing

cars from one station to another, the foremen being furnished with lists of the materials consigned to their sections and, after unloading their materials, forwarding the car to the next station on the list. Miscellaneous scrap rail, etc., which has been assembled at section headquarters on outlying sections, can be picked up in this manner and forwarded to destination. Local trains should be used to the fullest extent in preference to work trains, where it is proved that a saving in dollars and cents can be effected by their use.

Lines fortunate enough to be equipped with good motor cars and trailers on their sections have at their disposal a means of transportation which can, without doubt, be used to advantage for the distribution of certain materials to the extent permitted by the capacity of the motor cars in use. Some lines where ties are received during the winter and early spring months and no installations are made, due to frozen roadbed, while the gangs are limited to three or four men, report a substantial saving by unloading ties and fence posts at stations and transporting a few each day to points where they will be needed as the gang goes to work.

Material Should Be Delivered Quickly

It is the opinion of the committee, however, that the quicker the material required is put on the ground where needed, the greater the efficiency procured, as track gangs should not be taken away from construction work any more than is absolutely necessary or have their day's work broken into. Therefore, it is recommended that the season's allotment of ties be delivered as early in the year as possible, and when secured in large allotments, be distributed with work trains, using men enough to unload several cars at once as the train moves over each section.

We believe that motor cars and trucks should be substituted for work trains in transporting men to and from work in all cases where it is not necessary to handle anything but labor and no other work is required of the train. In this manner practically all delays caused by meeting and passing trains and on other accounts, can be eliminated and, as this service is cheaper than work trains, a marked saving is effected.

Self-propelled locomotive cranes with magnets are proving to be a money-saving substitute for the work train in large material yards and are very desirable in handling work of this nature.

Careful consideration and planning with the view of getting material on the ground and work train work performed during the season of the year when traffic is the lightest, and being thus enabled to eliminate as much of this work as possible during periods of heavy traffic is a feature of great importance and worthy of much consideration by all concerned.

Train Masters on Work Trains

This committee is of the opinion that the ability of the person in charge of the operation of work trains is one of the most important factors in successful operation. In dealing with assigned trains it is possible to exact the highest degree of efficiency. These are usually preferred jobs for train and enginemen, as well as for the foremen and labor. It is a well-known fact that certain conductors and enginemen are particularly adapted to this class of service and it is always possible to choose the best for assigned trains. The same preference should be used in choosing foremen and labor. Crews called to perform an occasional day's work cannot well be hand-picked, but their performance should be checked and the trainmaster, as well as the roadmaster or supervisor, should accompany them when possible.

It is recommended that all conductors and foremen be required to furnish daily reports to operating and maintenance officers in charge of their day's work, citing performance and delays, and these reports should be checked carefully by these officers, who should call on foremen and crews to explain unnecessary delays or failure to perform to reasonable standards of efficiency. As complete an outline as possible of the work to be done each day should be furnished by the maintenance officer in charge, to the conductor, enginemen and foremen, in advance.

Adequate power is of the utmost importance and the old idea which has prevailed, "that any old engine is good enough for a work train," must be dispelled in some way. It is our belief that the maintenance department is entitled to be furnished with adequate power for its work trains and that where it is not being furnished, and is available, those in charge should keep the matter before their superior officers until the condition is overcome.

Furnishing Water for Work Trains

Where water stations are far enough away from the work to cause unnecessary delays to men who are required to remain idle while the engine is running to a distant station for water, this condition should be overcome. We believe that where such conditions exist water should be furnished for work train engines also. Engines with the largest tanks available should be furnished for this service. Roundhouse delays are also a source of great expense and we should insist on our work train engines being ready to leave on call.

Power machines and up-to-date equipment of proven efficiency, properly operated, are great money savers when used in connection with work trains. Where air machines are in use, particular attention should be given to the air pumps on locomotives to see that they will provide sufficient air to operate rail loaders, etc., without delay. For loading and handling rail we recommend the double end rail loader with which some excellent records are being established, both in the amount of work done and low unit cost. Where the equipment is available it is economy to use two or more ditchers with one train, thus cutting down the work train days. Self-cleaning air dump cars on either side of the ditchers, with modern spreader plows combine to reduce work train days.

Summary

Use local freight service when conditions are favorable and a saving can thus be effected.

Make use of motor cars with trailers where that method can be employed successfully for handling certain classes of material.

Self-propelled locomotive cranes can be used with economy in large material yards in place of work trains.

Work should be planned carefully to avoid the use of work trains during heavy traffic seasons.

Specify the class of cars for loading new material when purchase is made to get cars from which it can be unloaded most readily.

Choose train and engine men carefully as well as foremen and laborers for work train service.

Require the conductor and foreman to furnish reports of each day's work.

The maintenance officer should outline each day's work for the train in advance, with copies in the hands of the engineer, conductor and foreman to avoid confusion and consequent delays.

Insist on adequate power.

Provide large tanks and water cars where necessary for locomotives and work train service.

Insist on engines being delivered on call from the roundhouse.

Secure proper co-operation between all departments involved.

Use power machines to reduce work train days.

Use double-end rail loading machines for picking up rail.

See that adequate capacity exists in air pumps for locomotives when working air machines.

Require safety in operation to reduce delays and prevent disorganization.

Committee: D. K. Newmeyer, roadmaster, S. P., chairman; A. M. Clough, supervisor, N. Y. C.; E. O. Carlson, supervisor, N. Y., N. H. & H.; G. H. Strople, supervisor, B. & O.; L. Coffel, supervisor, C. & E. I., and P. H. Burke, roadmaster, C., B. & Q.

How the Lehigh Valley Has Reduced Maintenance Expenses

By G. L. Moore
Engineer Maintenance of Way, Lehigh Valley

When I went on the Lehigh Valley the question of respacing ties to fit the joints became of increasing importance to me. We found one railroad system that required the rail ends to meet directly over the center of a tie. We found another system which required the rail ends to meet directly over the center of the space between two ties. On the first system they went to great expense to respace the ties when they laid new rail so that the rail ends would meet directly over the center of a tie, while on the second system they went to great expense to respace their ties to the spacing which the first system went to the maximum expense to get away from. Both of these roads had excellent track and we came to the conclusion that we would adopt whichever of the two standards happened to fit each individual joint best and save the expense of shifting ties. One of the first things we did, therefore, was to stop the unnecessary work and expense of shifting ties to fit the joints and devote this energy and the money to *productive* work. During this time efficient anti-creepers became available and we at once began to purchase great quantities of them, as we found that by applying them we could stop the creeping of the rails, and this made possible for us the non-spacing of joint ties.

Number of Ties Increased

We next began to consider whether economies could be effected by a stronger track construction. We soon came to the conclusion that there were not ties enough under the rails and as a result increased the number of ties in our heavy traffic tracks to 20 to a 33-ft. rail. This gave us 45 per cent of rail bearing on ties and still left room for the proper hand tamping of the ties. It is possible that we would have considered placing the ties even closer together if practical power tampers had been available at that time, but we hardly believe that there would be a sufficient gain to warrant a closer spacing especially if the stone ballast is kept clean so that the angular, interlocking shape of the broken stone retains the effect of transferring the loads upon an increased area of the sub-grade as compared with the area of the tie upon the ballast. To increase the number of ties from 17 or 18 to 20 per rail of course required the respacing of the ties. This work was done as the track was given a running surface at which time tie renewals were made.

In renewing ties we always, except in some special locations where the local conditions will not permit, give the track a running surface, renewing the bad ties without again respacing as they are now uniformly distributed. We have found, in the use of power tampers, that it is possible to raise the track not more than about an inch and thoroughly retamp it and thus overcome the effect of any center binding. We have also found that where there is sufficient ballast under the track it is advisable to raise the track as little as possible as it will stay in perfect surface much better.

Lay Rail in Winter

Now that we had good anti-creepers, and did not respace the ties to fit the joints we saw no reason why we should not lay new rail in the winter and thus, while directing the energies of the forces required to be carried through the winter to performing productive work, we at the same time relieved the summer forces of rail laying so that more work could be accomplished with the same force during the year. We found no difficulty doing this and no bad results. It is necessary to carry a light force to clear away snow and ice and take care of other emergencies that may arise, but it is of prime importance to employ this force on productive work just so far as you can and laying rail in the winter is one of the big items of productive work it is possible to do in that season.

We adopted the method of laying long stretches of track in one day by taking the track and running trains around. A little later we also began to lay rail with locomotive cranes. It has proved very successful and the officers of all departments interested would not consider going back to the method of laying rail under traffic.

Use a 136-lb. Rail

In 1915 we designed a 136-lb. rail section and laid the first 136-lb. rail early in 1916. This rail is 7 in. high, its base is 6½ in. wide and the section is otherwise of normal proportions. We were then using stone ballast and were fast approaching the time when we would have a sufficient amount under the ties; we had improved the drainage by surface ditching, widening cuts, placing sub-drainage through cuts and had strengthened the track by building up the shoulders. Any further strengthening of the track had to be done by increasing the strength of the rail.

We had been stepping up in the size of the rail from 80 and 90 lb. to 100 lb. and some 110-lb. rail and came to the conclusion that we had better go at once to the size of rail which would meet our requirements for many years, if not permanently. We placed this rail on tie plates whose top was sloped to cant the rail in at an angle of 1 to 20. We hoped to effect savings by reducing rail wear by using a heavier section with higher carbon steel; also having a big strong rail that would maintain the surface and line with the expenditure of less labor and that would distribute the heavy wheel loads over more ties and relieve the individual tie and thereby decrease tie renewals; to further reduce track labor we provided tie plates of economical design and long life.

We have obtained all of the results expected and in greater degree generally than we had hoped for. There is no such thing as spreading track on our sharpest curves. The average annual purchase of new rail in tons is less for the last 8 years that we have been using 136-lb. rail, than in former years. The tie plates are proportioned by reason of the sloping top so that they are thickest under the outside edge of the base of rail where the greatest strength is needed and from all appearances will yield a long period of service.

We began to use creosoted cross ties, switch ties and bridge ties in 1910 and now about 70 per cent of the ties in the track are creosoted. We have also used a great amount of treated bridge timber. There is no question in

our mind but that the creosoting of ties and timber has produced a very great saving.

As soon as practical power tampers became available we started to use them. We began with the 4-tamper machines but after a little while we found economy in bunching two or three of these machines together in batteries and then the Ingersoll Rand Company, at our request, developed the 12-tamper machine that we are using today. The air compressors of the tamping outfits are also used to operate air drills, pneumatic track wrenches, pneumatic wood boring tools, cement guns, etc.

We stopped purchasing crossing plank many years ago, substituting plankless crossings. The embankment shoulders have been built up with suitable material, ashes being generally used except along the rivers where light material would be washed away during high water. We believe the maintaining of the shoulder to proper height and width to be very important and we have given that work a good deal of attention. Stable track cannot be maintained with weak shoulders.

We have a large equipment of locomotive cranes which we use for a wide variety of tasks. A list that we made up a few years ago showed 66 different items of work which had been performed by these machines.

Our policies and methods generally may be stated to have been developed around the following principles:

Avoid unnecessary work.

Avoid unproductive work.

Direct the energies of the forces to productive work at all times and seasons.

Perform work in the most thorough manner.

Find and use the most economical methods.

Our average annual rail purchases in tons during the period of 1916 to 1924 inclusive, during which time we have been using 136-lb. rail only, is substantially less than the average number of tons of new rail purchased per year, going back to 1905 when the heaviest rail weighed 90 lb. per yard and there was considerable 80-lb. rail in use. During this same period the traffic on the road has increased very greatly.

The annual tie renewals have been decreased decidedly.

In 1920 the tie renewals were 116 to the mile.

In 1921 the tie renewals were 133 to the mile.

In 1922 the tie renewals were 77 to the mile.

In 1923 the tie renewals were 91 to the mile.

For the year 1924 they will be well below the 100 mark.

The average number of man hours chargeable to expenses in the years 1915, 1916 and 1917, or the so-called test period, were 10,496,749 hours.

In the year 1921 they were 8,776,115 man hours.

In the year 1922 they were 8,776,115 man hours.

In the year 1923 they were 8,577,948 man hours.

or 20 per cent less than during the test period. For the present year the man hours so far are running below last year.

The maintenance of way expenses for 1923 were $2,288.22 per track mile, including all items, and $1,426.55 for track items only.

The average expense per ton of revenue freight carried one thousand miles in 1923, including all items, was $1.3667 and for track items only 0.8521. The track items include only the charges to the roadway maintenance, ties, rails, other track material, ballast, track laying and surfacing, roadway machines, small tools and supplies, and removing snow, ice and sand accounts.

The Marking of Steel Rails

By C. W. Gennet, Jr.

Manager Rail Inspection Department, Robert W. Hunt Company, Chicago

The brand is always made by cutting the desired letters into the metal of one of the rolls. For several years all American mills have put the brand on the bottom roll and consequently the bottom side of the rail as it leaves the rolling mill is always the branded side. This is also helpful in determining which is the top end of the rail as rolled, for if the direction of the reading of the brand is known for a certain mill it never varies. Thus, when facing the brand of a Gary rail, for instance, and reading the brand from the left hand toward the right the left is the bottom end of the rail and the top of the ingot is toward the right.

Cutting the letters into the metal of the roll makes a raised letter on the web of the rail. Therefore brands always appear as raised letters and figures. The opposite is the case with the heat numbers. This number is stamped on the top side of the rail after it has come from the finishing pass and therefore it never conflicts with the brand which is always on the bottom side, although the figures of the heat numbers and the letters showing the ingot positions are actual indentations in the metal.

The number of the heat from which the rails were rolled is stamped on the top side of the web after the rails are sawed to length. This number is a series of figures arranged according to the particular mill's custom. The number is either preceded or followed by a letter signifying the position of the rail in its original ingot. Thus "A" is the top rail of an ingot, "B" the second, and so on. Occasionally another number is added to show the number of the ingot in the heat. This stamping is done by a machine arrangement in which the dies must be changed frequently and quickly.

The other marks put on rails at the mills consist of common prick punch marks on the web near the ends. Two such marks mean that the rail is second quality and its ends should be painted white. Three marks may mean a special class as required by some specifications. Various rails are also painted near the ends.

Report on the Handling and Disposing of Cinders

When loaded directly out of water, cinders are expensive to unload in cold weather as they freeze almost solid in the cars, while if not properly wet in the pit, the cinders are likely to burn in the cars, damaging them. This burning also greatly lessens the value of the cinders as ballast, and the unloading is dangerous and expensive owing to the heat and dust.

Cinders loaded at pits of a type where they are thoroughly wet and then allowed to drain before loading, will not freeze so hard in cars, and are not dry and dusty, so that they are unloaded economically and used to the best advantage. These facts should be carefully considered when designing new pits.

In the actual disposal of cinders we face two separate problems, one where cinders can be used by the maintenance of way department for ballast, bank widening, etc., and the

other where they cannot be so used to advantage and must be disposed of either as a waste product, or possibly in grading for proposed future tracks.

Track Layout and Equipment for Wasting

After careful investigation of various methods of handling such waste the committee makes the following recommendations:

(1) Locate the dumps as close to the point of origin of the material to be wasted as possible so as to avoid a long haul and enable equipment to be turned quickly. This tends to promote prompt unloading at all seasons and in winter permits the disposal of the material before it freezes.

(2) Construct an unloading track sufficiently strong and substantial to stand moving when lining over or raising.

(3) Establish a grade as much above the natural ground as possible, to permit the maximum disposal of material with the minimum throwing and lining of track.

(4) Provide modern equipment for handling, air dump cars of large capacity (20 to 30 yd.) are very efficient.

If cars that are not self-dumping must be used, a clamshell bucket or locomotive crane should be provided. A spreader should be used to level the dump and prepare it for the throwing of the track. With this equipment little labor is needed. Two men can clean out the cars when this is necessary, help handle the spreader, etc. The locomotive crane can often do the switching that may be necessary and so reduce switch engine expense. At least 500 cu. yd. of cinders can be disposed of daily with this equipment and layout. From information available it would seem that from 5 cents to 15 cents per yard (not including haul and switching) should cover the cost, depending on the quantity and kind of material to be disposed of, the cost decreasing as the yardage increases.

Cinders for Ballast

The committee is of the opinion that cinders can be used more generally for ballast than is being done at present. For economical handling, equipment should be provided which is self-cleaning, and so constructed and maintained that the unloading can be controlled, distributing the quantity of ballast needed. There are several types of cars which answer this requirement. A fair capacity (30 to 50 cu. yd.) is usually desirable so as to justify a long haul. Cinders can be handled economically with a Lidgerwood and plow, where the quantity to be unloaded at one time is sufficient to justify such equipment. If 15 to 20 cars are to be unloaded at one time, and especially if 30 to 40 cars are handled weekly, the above equipment is suitable. With such equipment ballast can be distributed evenly. To secure enough yardage to justify this equipment cinders may have to be assembled from several points. This can often be done easily if an effort is made. When the quantity justifies it the committee is in favor of a regular work train doing the unloading. The crew of such a train is generally more interested in the work than a local crew and the roadmaster should either be in charge himself, or have his assistant or a thoroughly competent foreman in charge.

Unloading cost data are hard to secure and vary widely, due to equipment, local conditions of traffic, and quantity handled. With equipment such as described above cinders have been unloaded for 2 cents a yard and the cost should not exceed 5 cents. Where hand unloading is done from dump and drop bottom cars the cost runs from 10 cents to 25 cents a yard. If cinders have to be shoveled over the top of the car, the cost has run as high as 50 cents a yard. None of these costs apply to frozen cinders, but to average working conditions.

The Storage of Cinders

While the committee favors direct unloading from pit to track, it does not recommend this practice unless the track is properly prepared, or when, because of weather or traffic conditions, the cost of such direct unloading is excessive. When conditions are such as not to favor direct unloading, as where it is necessary to hold cinders to surface a rail relay, raise a grade, or change a track, where cinders will be needed in greater amount than they are being produced, or where old ballast and dirt can be cleaned out properly, the committee recommends the storing of cinders.

The disadvantages of storing are: (1) the cost of the two additional buildings, (2) the deterioration of the cinders while stored in large piles, and (3) the difficulty of finding unloading tracks and storage space in many terminals.

The advantages of storing are: (1) the prompt release of equipment, (2) the unloading before cinders become frozen so avoiding the excessive expense of unloading under winter conditions, (3) the assembling of large quantities of cinders that will be available later when needed, and when conditions on the line are most favorable for loading, and (4) the fact that proper equipment is more easily arranged for at some times than at others or when cinders are to be loaded out in large quantities and when they are to be cleaned up in a short time.

Committee: H. R. Clarke, engineer, maintenance of way, C., B. & Q., chairman; H. Q. Hamilton, assistant division engineer, B. & M.; G. G. Martin, assistant engineer, B. & L. E.; W. T. Hanley, division engineer, Penna.; H. Ferguson, superintendent of track, G. T.; J. Tierman, roadmaster, K. C. S.; T. E. Bliss, assistant engineer, St. L.-S. F.

Report on Rail Laying and Ballasting in Multiple Track Territory

Estimates of the cost of stopping and starting a heavy tonnage train, including wear on equipment, fuel, wages and car delay, vary from $2.50 to $7. Where the delay is greater than that involved in simply stopping and starting a train the costs are greater. At the same time increases in rates of pay, shortened working hours and in some localities decreases in the average efficiency of track laborers have made it necessary that, for economical reasons, maintenance work be handled as efficiently and with as little delay from or interference with train movements as possible.

The hourly cost of a 50-man gang with one foreman and two assistant foremen (at 40 cents per hour for the men and 70 cents per hour for the foremen) is $22.10. Every time this force has to stop work, connect up track, stand back to let a train pass and then get started again it loses 30 minutes with no net results in completed work. Each such connection, therefore, represents a direct out of pocket labor loss of $11.05, for which no return is secured. Added to this is ordinarily a freight train delay of 20 minutes, adding at least 50 per cent to the above cost of making a temporary rail connection. The above figures mean, therefore, that it costs over $16 to pass every train where rail renewals are being made under traffic.

Handling Traffic During Repairs

These conditions have led certain heavy traffic lines to inaugurate the practice in multiple track territory of singling the train movements in both directions over one track during a period of several hours or the working day, in order to give the maintenance forces undisturbed possession of the other track for a sufficient time to complete large blocks of the work without train interference. Where three or more tracks

exist this practice is simplified, but experience has shown that it can be done very advantageously on double track railway.

The practice followed in handling the train movements between the temporary ends of the double track varies. In some instances they are handled by dispatchers direct, in others by a pilot engine acting under absolute flag protection, or by operators or division supervisory officers located at each end of the single track section, in communication with each other, and handling the movements between their respective stations. Cross-overs, preferably facing point, where trains leave their own track and trailing cross-overs where they go back, are necessary. Where telephone dispatching circuits exist the work can be handled simply by placing portable telephones, connected with the dispatcher's circuit, at each temporary end of double track. Responsible officers located at each telephone with necessary flagging assistance handle trains over the section of single track between them. Through the dispatcher they keep in touch with approaching trains. The dispatcher need take no part in the detour movements except occasionally, on request, to hold a train back at a passing siding to prevent congestion ahead of a passenger train. It is advisable that trains be given information by train order or message about the detour movement before reaching the temporary end of double track, so that the train and engine crews will understand the proposed movement and avoid delays on account of misunderstandings.

It is of great importance that the roadmaster or supervisor directly in charge of the work devote thought to perfecting the organization and assignment of his forces in advance, so that there will be no confusion in getting the work started and no conflict between the forces. As his large force will be made up of many smaller forces, the foreman of each of the smaller forces should understand in advance what tools to bring with him and what his assignment on the work shall be. Where a stretch of three miles of rail is to be laid in one day and the work completed, full bolted and spiked, with rail anchors in place, joints bonded for automatic signals and the track ready for train movements at normal speed in 10 hours from the time the track is first broken, a force of 175 men with two rail laying machines should be ample. Some lines on which the practice has been highly developed use forces as large as 150 men with each rail-laying machine and two or more machines on the same section. Ordinarily, however, such large forces are not available, even with the concentration of the rail gang. The chairman has seen a stretch of 1,190 100-lb. rails with one switch laid complete in less than a ten-hour day, with a force of 160 men.

Some track men are prejudiced against this method of handling rail renewals, believing that work done under such conditions with large forces must be done very hurriedly and poorly. As a matter of fact, work can be done much more uniformly where long periods of freedom from trains are assured. Where rail is laid under traffic poor work is likely to creep in during the hurry to make a connection to prevent delay to or to pass a waiting train. Where the traffic is detoured and the work continuous it can be so organized that each man or gang has a set class of work to perform, and the results obtained are more uniform than is possible where the disorganizing effects of frequent track connections enter.

The economies effected by laying rail under a single track arrangement are very marked. No detailed figures based on any one operation will be given, but we believe we are conservative in estimating a minimum saving of $2 per ton in the direct cost of completed rail renewals with rail of 100-lb. or heavier section. Where the traffic is dense the saving will exceed this considerably. In addition to this direct and measurable saving through a reduction in the cost of laying rail there is an indirect but no less real saving in the reduction of aggregate train delay. Where cross-overs are reasonably well located experience has demonstrated that trains can be detoured for a period of 10 hours with less aggregate train delay than occurs in one day where rail is laid under traffic. At the same time an amount of rail can be laid during this period of one day which would extend over a period of two weeks under ordinary methods of working under traffic. On a line of ordinary traffic density with an average of one train over each track an hour, we believe that the total train delay incident to rail renewals can be reduced more than 75 per cent by diverting the traffic while renewing rail. Where the practice has once been started, transportation officers, to whom rail gangs are ordinarily a source of annoyance, become enthusiastic believers in this method of laying rail on double track territory.

On some double track lines most existing cross-overs are trailing, but where a stretch of rail of any considerable length is to be relaid it is economy to put in the necessary occasional facing point cross-overs temporarily in order to detour movement for rail renewals. The actual labor cost of putting in and removing a temporary facing point cross-over will seldom exceed $250, which is properly a charge to the rail renewal expense, and which will be saved on each mile of rail laid.

The above described practice has generally been limited to rail renewal operations, but there is no reason why it cannot be used advantageously in the other major track operation of heavy ballasting out of face. Where such ballasting is scheduled with track lifts exceeding five inches it is the usual practice to skeletonize the track, make necessary tie renewals and distribute the ballast, and then raise the track. All tamping is done with square pointed shovels. On an average it takes as long to make a run-off and tamp up the track to let a train over as it does to make a connection in rail renewals and the work of a large gang may be delayed 30 minutes thereby. Frequently poor tamping is done in the hurry of such an operation, resulting in irregular track later on. Any track man can appreciate how greatly it would simplify the work of obtaining uniform tamping, which is the prime requisite for good-riding, newly-ballasted track, to be able to work without interference from train movement. As track lifting is normally a faster operation than rail laying, the saving in train delay by diverting the movement would not be as great for ballasting as for rail laying; but even so, a sufficient saving would be effected to make it economical from a train movement standpoint.

Committee:—H. M. Smith, superintendent, N. & W., chairman; W. F. Nicols, supervisor, L. V.; William Shea, general roadmaster, C., M. & St. P.; G. W. Kohn, roadmaster, C., R. I. & P.; M. Regan, supervisor, C. & O., and J. A. Roland, roadmaster, C. & N. W.

R. H. Aishton Urges More Attention to Public Relations

R. H. Aishton, president of the American Railway Association, spoke before the Association on Wednesday morning in part as follows:

At your last convention held in Chicago a year ago you discussed the part to be played by the Roadmasters in making a success of the program to provide adequate transportation. "Railway Engineering and Maintenance" offered prizes for suggestions as to how maintenance men could help to handle the peak load of traffic. Thirteen papers were submitted as result of this magazine's offer and were published.

The fullest use of equipment and facilities of our railways

cannot be secured unless delays to movement are reduced to a minimum. To accomplish this it is the duty of the maintenance of way department to see that every facility is capable at all times of standing up under the heavy demands placed upon it by peak traffic and in doing this to accomplish the work with the very least detention to traffic.

The results of your efforts, coupled with the efforts of every individual having to do with the operation and maintenance of the railroads in the past eighteen months, has brought about an entirely changed public opinion regarding the railroad situation. Two years ago there were grave questions in the minds of the public as to the ability of the railroads to perform adequate service. These doubts have been entirely removed by what has been accomplished and today the transportation systems of America stand high in the public opinion as to their ability to provide transportation service at all times promptly, efficiently and well. In fact, one of the principal complaints we have had of late has been that freight reaches its destination so regularly and quickly that on arrival at destination it is unduly detained awaiting receipt of bill of lading coming by mail. With my knowledge of the intelligence, the loyalty and the determination of railroad men there can be no question that, under ordinary conditions, the ability of the railroads to render adequate transportation service will not again be seriously questioned by the public mind.

One of the large questions, however, before the American public, and particularly of that part of the American public engaged in agriculture, is as to the degree of economy with which the railroads are operated. You and I know, from our close connection with the business of the constant efforts that are made, as exemplified by this meeting and others, to produce better and more economical methods of accomplishing a given result. I doubt whether any manufacturing or commercial business in the country, and I know that no other transportation machine in the world, has shown the progress the American railways have in constantly introducing new methods, with consequent economies.

The trouble with railroad men is that they don't tell the public enough about what they are doing. You men and the men who look to you for information and advice bear a responsibility in establishing the proper relationship with the public along your lines of railroad as great or greater than any other class of men in railroad service. No other class of men in the service are neighbors, separated only by dividing line fences, with so many people, or such influential people, in this country as you. The railroad right of way cuts through, or is immediately adjacent to, a large majority of the farms in this country. The attitude of the owners of those farms and of their neighbors towards the railway companies is in a measure dependent upon their observation and information obtained as to the operations of that railroad from the men with whom they come in contact. The section foreman, the supervisor, the roadmaster all have a very great influence on the attitude of these people in the conduct of their daily work and in the point of contact and touch with these *neighbors* of yours.

Maintaining a High Degree of Line and Surface

By W. J. Backes
Assistant General Manager, New York, New Haven & Hartford

I have been prompted to speak largely by a thought which came to me through a statement made by one of our supervisors as to the ability in the future to maintain the high degree of line and surface that was the case prior to the war. As you all know the greatest element lowering the standard of maintenance during the war period was the lack of proper labor. The situation has improved somewhat, but it is still subject to the migratory habits of the laborers which they acquired during that period. Consequently the efforts of all concerned are spent largely in continually training new men. This has had a tendency to discourage the section foremen and it is only through the enthusiasm and loyalty of our supervision that we are able to hold our own.

Much can be accomplished in overcoming the inexperience of laborers by using mechanical devices. The benefits to be obtained through the use of labor saving devices can only be attained to the fullest extent by thorough organization. This is a matter that the supervisors must give the closest attention. That we will have a marked shortage of labor to face for a number of years to come, is generally accepted without question, at least by officers who are responsible for the maintenance of railroads situated largely in industrial territory. The situation has been aggravated materially within the last few years by the restrictions placed upon immigration and apparently a modification of the law that will improve conditions can not be expected for some time to come. This makes necessary the adoption of track appliances and labor saving devices that will reduce the labor demand to a minimum.

For example, the use of rail unloaders and hoists has materially helped in reducing the amount of heavy lifting to be done by the men. The use of tie tampers has reduced to considerable extent the hard work of tamping track. The use of motor cars has relieved the men of pumping hand cars to and from their work, resulting, not only in a saving of time, but in having the men in better condition to work when they get on the job.

The use of better and heavier material has also reduced to some extent the amount of labor necessary to maintain good line and surface. There is every reason to believe that the use of tie plates of generous dimensions on creosoted ties will materially reduce the disturbance of the track for tie renewals, lining and regauging of track, and give a consequent saving in labor. The use of a high girder section of rail, which will distribute the load over more ties than at present, and which will provide for generous fishing space for the angle bars will very materially assist in reducing the number of low joints and consequent necessary labor. It therefore behooves the maintenance of way department to study the methods of proper organization to obtain maximum results from our labor-saving devices, and also to study thoroughly and carefully the materials that go to make up our track structure.

These things can not be obtained upon the railroads unless we can clearly demonstrate the economies and efficiencies to be derived from their use. In the case of the work equipment, experience that has been had in the past indicates that where the use of these devices is properly organized we can show marked economies and it will be those who develop methods of organizations to obtain these economies, who will be provided by their managements with such equipment.

This is also true of the heavier track materials. It is very imperative that the weight of track appliances be increased to meet more nearly the increased loads which the railroad structure is required to carry. Axle loads have been increased to a very marked degree. The repeated blows given to the track structure by long trains of coal cars

loaded to capacity is about as destructive an element as we have to deal with. It is not fair to expect that a track structure which was adequate 20 years ago, should carry these loads without some indication of grief. A heavy track structure somewhere near in proportion to the load being carried, should affect a marked saving. On the other hand the authority to obtain these materials from the managements can only be had by showing actual economies.

I am firmly of the opinion that it is possible to provide track with as good line and surface as we had prior to the war, provided a heavier track structure is built and advantage taken of the many devices which increase the efficiency of the men.

One of the most serious blows to the maintenance department has been the change-over from the eight to the ten-hour day. We are attempting generally to perform the same amount of work with the same or a less number of men than we had prior to the war, with a 20 per cent reduction in the working hours. The performance that has been made in maintaining track under these adverse conditions, gives great credit to the supervisory officers of the maintenance of way department.

Report on Increasing the Output of Maintenance of Way Labor

The employment situation in the maintenance of way department, particularly as it affects the track forces, is admittedly unsatisfactory. The men now recruited for this work are largely of a type that does not make for effective results. But even more serious is the fact that it presents an unfavorable field from which to select capable section foremen. The foreman is the key man. He must shoulder his full share of the responsibility if something goes wrong.

Herbert Hoover cites intermittent employment as the greatest of the three largest wastes in production. The investment in railway employees would pay better dividends if better men could be attracted with reasonable assurance of steady employment.

Mr. Hoover places as the second greatest waste in industry, unemployment that arises from shifting industrial relations. It is sheer waste to dismiss a well-trained employee if it is possible to retain him because in so doing one automatically throws away his investment.

Mr. Hoover characterizes the third waste as due to strikes and lockouts. This is remedied by the method in effect on one large railroad system which has for its basis mutual confidence, facts mutually established and joint conferences of employer and employee to determine what the facts mean and how they shall apply. It means the adoption of a practical common sense understanding that the best way to settle disputes is to trust each other, to find out what the facts are and then to sit down around a table and talk them over in a frank and friendly fashion. This means employee representation in management and insures a square deal and a real spirit of co-operation.

Last but not least, consideration must be given to proper housing conditions. Clean, efficient labor demands a comfortable healthy home.

With labor satisfied, we must have organization. The foreman who is pushing his men does not necessarily prove that the method by which he is accomplishing given results is the method by which he can accomplish maximum production in the minimum time. All foremen endeavor to accomplish the same results, but their methods are different. That is reflected on their sections. Nine foremen out of ten are interested in knowing how the other fellow does his work. This very fact makes the foreman more alert and more eager for better performance. It is then the plain duty of the supervisor to make a comprehensive study of ways to coordinate and systematize their methods, which will reflect immediately on the balance sheet.

Recommendations

The recommendations of the committee are:

First: Permanency of employment without lay-off days and indefinite furloughs.

Second: A graded rate whereby men who remain in the service three to five years will receive a higher rate than new men.

Third: The adoption of a piece work basis for certain kinds of maintenance of way work only, but the rejection of a bonus as allowing a rate higher than the basic rate.

Fourth: The adoption of labor saving devices as rapidly as authorizations permit.

Committee: A. E. Preble, supervisor, Penna., Paoli, Pa., chairman; W. H. Saltzman, supervisor, Penna., Ravenna, Ohio; E. Keough, assistant engineer maintenance of way, C. P. R., Montreal, Que.; J. W. Powers, supervisor, N. Y. C., Rochester, N. Y.; C. L. Elliott, roadmaster, Ft. W. & R. G., Brownswood, Tex.; J. B. Kelly, assistant general roadmaster, M., St. P. & S. S. M., Minneapolis, Minn.; W. A. Moberly, roadmaster, C., M. & St. P., Elgin, Ill.

Determining the Need of Grade Crossing Protection

By F. W. Hillman
Division Engineer, Chicago & Northwestern

How shall it then be decided as to whether or not a crossing shall have protection? I doubt very much if any general rule of this nature can be formulated. Each case must be decided by itself. However, there are three elements which must be considered in all cases; the traffic on the highway; the traffic on the railway and the vision of tracks from the highway.

Too often snap judgment is made and crossing protection put on after only a casual survey. When once on it is difficult to remove. An analysis of the crossing should be made first and this should be made from a traffic count and a vision survey. The traffic count should show by hourly periods the traffic on the highway, indicating the number of pedestrians, bicycles, teams and automobiles and the railway traffic, classifying it as to direction and as to through and switch movements. Such a count should be for more than one day. One satisfactory method is to get a count for one 24-hour period then picking out the eight hours most heavily traveled and taking the count for that period for two more days. A Saturday and Sunday should be included in the count and the other on a midweek-day. Possibly three 24-hour periods should be counted but this is expensive, as it involves punitive time for men counting and seems justified only in extreme cases. Judgment must be exercised in making this traffic count.

The vision survey should show the distance from the

highway that the trains can be seen from different points on the highway, going out far enough from the track to secure a fair description. Possibly 300 or 400 ft. is enough. Obstructions to view, grade and alignment of highway, alignment of tracks and all warning signs should be shown.

From the traffic count it may be shown that protection for only a portion of the day is needed or only on certain days in the week. The vision survey may indicate that some obstruction to view can be removed, such as the trimming or cutting down of trees, or the widening out of banks when the highway is in a cut, or the improvement of the approach of the highway when crossing tracks on a fill. Possibly a slight change in location of highway can be made or the alignment can be improved. Consideration should be given to the scheme suggested by the A. R. A. which contemplates dividing the highway into two avenues across railroad right-of-way with a short fence and erecting the "Look Out for Cars" sign in the center. This has been adopted in some cases and proved satisfactory. In other places it is objected to as being an obstruction in highway. Consideration should be given to the location and kind of advance warning signs. Striping of concrete highways black and white at a few places some distance from tracks also appears to be effective.

If, after a study of the traffic and vision survey other protection than properly caring for physical condition is determined as being necessary, what kind of protection shall it be? Protection can be divided into two general classes: automatic and manual. Which of these types is proper is difficult to determine and there are a number of bodies at work on this subject at the present time.

Having men in connection with crossing protection, their supervision is important. The question has been raised as to who should supervise these men. It seems best to have the roadmaster do this, giving him an assistant to look after such work where there are a large number of men to supervise. The section foreman should also have supervision, acting, of course, under the roadmaster or assistant. The type of man hired and his physical condition should be carefully considered. The Chicago & Northwestern requires all such men to be examined on rules and undergo a physical examination and those with imperfect vision or badly crippled are not employed. The men with best appearance should be placed on the more important crossings.

There is a question as to whether a flagman or gateman should give proceed signals to highway traffic. His principal function is to stop it. If proceed signals are given, traffic is likely to forget to take the precautions of looking and listening. Some roads forbid flagmen to give these signals.

Report on Possibilities of Winter Track Work

One of the principal reasons for wishing to do track maintenance work during the winter months is that a much more adequate labor supply is available at that time. Conditions of labor supply vary in the middle zone according to location. There are places where there is always plenty of native track labor; there are other places where there is scarcely any native track labor during the summer months but plenty during the winter; while there are still other places where there is no native track labor at all during the summer months and an insufficient supply of foreign labor at that time, but many track men seeking employment during the winter months.

Among the kinds of track work that can be done equally as well during the winter months as at other times of the year are:

Rail renewing.
Frog and switch renewals and repairs.
Track gaging.
Angle bar renewals and bolt tightening.
Railroad crossing renewals and repairs.
Tie plating out of face.
Cross and switch tie unloading.
Rail sorting, material reclamation, etc.
Cinder unloading, bank widening, etc.
Fencing.
Certain ditching operations.
Sewer and drain pipe installation and repair.

as well as numerous other jobs that do not necessitate working ballast or lifting the track. It is true that some changes in the manner of doing the work will have to be made. For instance, track fastenings can not be distributed much in advance of rail laying, as they will freeze to the ballast, or be covered with snow. Track where rail is to be laid will have to be cleaned before frost enters the ballast, to avoid picking frozen ballast to apply rail anti-creepers.

Winter Relaying Successful

During the past winter one of the large railroads in the middle zone laid 6,000 tons of 100-lb. rail, replacing rail of the same weight and pattern in multiple track territory, trains being detoured over the other track so that the track gang could have the uninterrupted use of the track on which it was working for five to six hours. This road reports an average cost of laying of $2 per ton, with some as low as $1.60 and others as high as $2.40. By getting this work done in the winter this road had its gangs as well as its cranes available for other work in the summer.

There will be times during the winter months when none of these jobs can be done on account of extremely cold weather or snow storms, but the men will then be available for work occasioned by the bad weather. At such times it has otherwise been necessary to hire a number of new men at much higher rates of pay. The time lost in the winter months would be no more than that lost on account of rains during other seasons. If work that could be done during the winter months would be deferred until that time, it would do away to a considerable extent with the practice of putting on as many extra gangs of inexperienced men during the summer months as the gangs used on this work during the winter would be available for ballasting, tie renewals, surfacing and lining, and other jobs that must be done when there is no frost in the ground.

This plan will also provide for the continuous employment of all forces, thereby attracting good men. It will also have a tendency to stabilize wages, as it would practically eliminate the present practice of railroads recruiting additional maintenance gangs when other industries are taking on men and offering them numerous concessions that railroads can not offer.

Committee: E. C. Buhrer, supervisor, N. Y. C., chairman; J. J. Navin, supervisor, Penna.; L. E. Fleming, roadmaster, A., T. & S. F.; Charles Newberg, roadmaster, C. & N. W.; W. S. Fife, roadmaster, N. Y. C. & St. L.; A. Salinsky, roadmaster, B. R. & P.

Election of Officers

At the concluding session of the convention Thursday morning the following officers were elected: President, W. F. Muff (roadmaster, A., T. & S. F., Newton, Kan.); first vice-president, G. W. Morrow (supervisor, N. Y., N. H. & H., New Haven, Conn.); second vice-president, J. B. Kelley (assistant general roadmaster, M. St. P. & S. S. M., Minneapolis, Minn.); secretary, T. F. Donahoe (general supervisor of track, B. & O., Pittsburgh, Pa.); treasurer, James Sweeney (supervisor, C. & E. I., Danville, Ill.); members of executive committee for four years, H. R. Clarke

(district engineer maintenance of way, C. B. & Q., Lincoln, Nebr.), and P. J. McAndrews (roadmaster, C. & N. W., Sterling, Ill.).

It was decided to hold the next annual convention at Kansas City, Mo.

Other Features

The annual dinner was given by the track Supply Association to the members of the Roadmaster's Association at the Commodore Hotel on Wednesday evening, approximately 600 people being present. Following the adjournment of the convention on Thursday noon, the afternoon was spent in the inspection of the main line of the New York, New Haven & Hartford, between New York and New Rochelle, returning via Hell Gate Bridge of the New York Central and the Sunnyside terminal of the Pennsylvania Railroad, on a special train furnished by the New York, New Haven & Hartford.

Other Reports

E. Keough, assistant engineer maintenance of way of the Canadian Pacific Eastern Lines, described the methods in effect on that road whereby rail has been relaid at the average rate of seven track miles per day during the last season (see *Railway Age* of December 8th, 1923). This paper brought out an active discussion.

The Track Supply Association's Exhibit

The exhibit of the Track Supply Association was held in the main ballroom adjoining the convention hall. The booths were well and attractively arranged with a total of 60 companies exhibiting.

The officers for the past year were: President, J. J. Cozzeno, Union Switch & Signal Company, New York; First Vice-President, A. H. Told, Positive Rail Anchor Company, Marion, Ind.; Secretary-Treasurer, W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y.; Directors, Alex Chapman, Rail Joint Company, Chicago; K. J. Eklund, Mudge & Company, Chicago, and J. Howard Horn, National Lock Washer Company, Newark, N. J.; Advisory Directors, E. T. Howson, *Railway Age*, Chicago; and R. A. Van Houten, Sellers Manufacturing Company, Chicago; Ex-Officio Director, F. M. Condit, Fairbanks, Morse & Company, Chicago; Honorary Director, J. B. Marten, President, Roadmasters' and Maintenance of Way Association, Cleveland, Ohio.

The list of firms exhibiting and the character of their exhibits follows:

List of Exhibitors

Air Reduction Sales Company, New York; oxygen, acetylene and carbide cutting and welding apparatus and regulators; E. Van Alstyne, C. A. Daly, E. W. Irwin, H. A. Hocking and R. F. Helmkamp.

American Chain Company, Bridgeport, Conn.; guard rail clamps, replacers, rail benders, one-piece guard rail, compromise joints; J. J. O'Connell and A. H. Weston.

American Cast Iron Pipe Company, New York; water pipe and couplings; E. W. Herrmann and W. J. Lyman.

American Hoist & Derrick Company, St. Paul, Minn.; illustrations and photographs of ditchers; Miss H. Hoeller, W. L. Manson, A. W. Dodge and H. W. Davis.

American Valve & Meter Company, Cincinnati, Ohio; interlocking and gearless switch stands and safety locking device; J. T. McGarry, Cecil Stevens and D. J. Higgins.

Balkwill Manganese Crossing Company, Cleveland, Ohio; model of an articulated cast manganese steel crossing; S. Balkwill and S. W. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa.; switch stands, guard rail, lock nuts, gage rods and warning signs; Neil E. Salsich, E. H. Gumbart, R. Knibloe, J. W. Stoever, G. S. Vickery, R. L. Gillespie, R. Deghuee, C. A. Alden and J. V. Honeycutt.

Brown Rail Loader Company, Boston, Mass.; model of rail loader, moving pictures; J. C. Barr and W. B. Joyce.

Buda Company, Chicago; section motor car, switch stand, tool grinder, motor car wheels, track drill, track jack; J. E. Murray, H. C. Beebe, H. C. Clawson and C. W. Wood.

Carbic Manufacturing Company, Duluth, Minn.; carbic lights, acetylene welding and cutting apparatus and carbic cakes; Gordon Paterson and C. H. Bolinder.

Chicago Malleable Castings Company, Chicago; rail anchor tie plates and photographs of bumping posts; Warren Osborn.

Chipman Chemical Engineering Company, Inc., New York City; B. G. Thompson and T. B. Bowman.

Cleveland Railway Supply Company, Cleveland, Ohio; flangeway guard, foot guard, guard rails, switches, switch stand, rail anchor, photographs of locomotive crane; F. A. Peck, W. H. Neeson, D. P. Blum and P. L. Millikin.

Creepcheck Company, Inc., Hoboken, N. J.; creepchecks; A. J. Dinklage, P. E. Brown, F. J. Reagan, T. J. Farrell and T. D. Crowley.

Crerar Adams Company, Chicago; hand and power bonding drills, track drill, rail saw, die starter, jacks, track liners and handles; Russell Wallace and W. I. Clock.

Duff Manufacturing Company, Pittsburgh, Pa.; track, journal and bridge jacks; C. A. Methfessel and E. A. Johnson.

Elliot Frog & Switch Company, East St. Louis, Ill.; adjustable switch brace, guard rail clamp, adjustable clips; H. J. Elliot and T. K. Drummond.

Fairbanks, Morse & Co., Chicago; inspection car and wheels; F. M. Condit, R. F. Lane, H. L. Hilleary, J. L. Jones, E. E. Pendray, E. P. Chase, H. E. Vogel and P. H. Gilleland.

Fairmont Railways Motors, Inc., Fairmont, Minn.; section car and light inspection car; H. E. Wade, W. F. Kasper, W. D. Brooks and E. R. Mason.

Frictionless Rail, Boston, Mass.; rail; D. W. Simonds and J. W. McManama.

J. R. Fleming & Son Company, Scranton, Pa.; switch point protector; J. R. Fleming, A. J. Fleming and J. A. Moffatt.

Hauck Manufacturing Company, Brooklyn, N. Y.; thawing outfits, kerosene torches, circular flame burners, venturi burners; W. C. Elze and G. N. Broadhurst.

Hayes Track Appliance Company, Richmond, Ind.; derail and model, and portable blue flag derail; S. W. Hawes, H. J. Mayer and H. Q. Hamilton.

Headley Good Roads Company, Philadelphia, Pa.; photographs of crossings; W. T. Gilbert and E. J. Hunt.

Hubbard & Company, Pittsburgh, Pa.; shovels, track tools and nut locks; J. S. Wincrantz and Steward Remmel.

Idol Track Liner Co., Chicago; track liners, track jacks, tie plates, rail pusher; T. D. Crowley and F. Hackman.

Ingersoll-Rand Company, New York; pneumatic tie tamper, pneumatic rail drill, pneumatic nutting machine, pneumatic shovel and pneumatic bonding drill; W. H. Armstrong, E. F. Kultchar and G. E. Bridge.

Ingot Iron Railway Products Co., Chicago; models of corrugated metal culverts and photographs; E. F. Moore, L. M. Sandston, T. W. Jenkins and P. M. Reinartz.

O. F. Jordan Company, East Chicago, Ind.; moving pictures; A. L. Greenabaum, J. C. Forbes and A. W. Banton.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.; motor car, combination track gage and level; F. E. McAllister, E. M. McNally and K. I. Clisby.

Kentucky Rock Asphalt Company, Louisville, Ky.; rock asphalt, models of crossings; W. F. Pollard.

Lundie Engineering Corporation, New York; tie plates, rail anchors; Dr. John Lundie, W. Brooke Moore, L. B. Armstrong and E. Brandeis.

Maintenance Equipment Company, Chicago; friction car stop, steel fence post, blue flag derail, moving pictures of rail layer and power ballast screen, switch point straightener, tie spacer and combination tie plate; J. A. Roche.

Metal and Thermit Welding Corporation, New York; welding compounds and welded materials; W. R. Hulbert and R. W. Swan.

Mudge & Company, Chicago; motor car; Karl J. Eklund.

National Lock Washer Company, Newark, N. J.; spring washers, lock washers and testing machine; J. Howard Horn, F. B. Archibald, W. R. Hillary and F. J. Gerhard.

Northwestern Motor Company, Eau Claire, Wis.; photographs of motor cars; F. W. Anderson.

Oxweld Railroad Service Company, Chicago; F. C. Hasse, W. H. Kofmehl, L. C. Ryan, Fred Lurquin, C. A. Bloom, F. G. Duffie and W. E. Campbell.

P. & M. Company, Chicago; anti-creepers and bond wire protectors; D. T. Hallberg, L. S. Walker and T. J. Byrne.

Pocket List of Railroad Officials, New York; copies of publication; Harold A. Brown.

Positive Rail Anchor Company, Marion, Ind.; girder type guard rail, rail anchors, rail braces, guard rail plates and braces and tie plates; A. H. Told and L. C. Ferguson.

Q & C Company, New York; guard rail clamp, compromise joint, derails; F. F. Kister, L. T. Burwell, E. M. Smith, H. T. Henry and R. B. Quincy.

Rail Joint Company, New York; insulated joints, compromise joints, standard joints, track liner and motion pictures; Charles Jenkinson, R. W. Payne, Alex Chapman, G. T. Willard, C. B. Griffin, W. E. Gadd, Milton Markley, E. A. Condit, V. C. Armstrong, C. A. Disbrow and R. F. Seward.

Railroad Supply Company, Chicago; tie plates; H. M. Buck, A. H. Smith and G. F. Hall.

Railway Age, New York; copies of *Railway Age*, Railway Engineering and Maintenance, Railway Electrical Engineer, Railway Signaling, Railway Mechanical Engineer, Maintenance of Way Cyclopedia, Roadway and Track, Simplified Curve and Switchwork; E. T. Howson, Milburn Moore, J. M. Rutherford, F. C. Koch, H. E. McCandless.

Railway Review, Chicago; copies of publication; C. L. Bates, Elmer Deugeon, G. E. Boyd.

Ramapo-Ajax Corporation, Hillburn, N. Y.; automatic switch stand, double shoulder switch plate, manganese guard rail, guard rail clamp, forged braces; J. B. Strong, W. C. Kidd, R. J. Davidson, Jr., D. F. Hilton, T. E. Akers, John V. Houston and J. E. Davidson.

Rapid Drainage Pipe Corporation, New York.

Reade Manufacturing Company, Jersey City, N. J.; model of chemical weed killing machine, C. H. Reade, L. J. Reade, F. E. Norris, G. W. Josten, E. E. Prarie and F. L. McAndrews.

Reliance Manufacturing Company, Massillon, Ohio; nut locks; H. J. McGinn, E. W. Hart, E. D. Cowlin and R. L. Shireman.

Safety Appliance Sales Company, Chattanooga, Tenn.

Sellers Manufacturing Company, Chicago; wrought iron tie plates; G. M. Hogan, R. A. Van Houton and R. J. Platt.

Templeton, Kenly & Co., Ltd., Chicago; track jacks, bridge jacks and emergency jacks; G. L. Mayer.

Track Specialties Company, Inc., New York; guard rail clamps, step joints, spikes, tie check-checkers and dating nails; W. B. Lee and J. A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa.; insulated rail joints; J. J. Cozzens.

Verona Tool Works, Pittsburgh, Pa.; track tools, nut locks, track jacks, rail joint springs, track liners and circuit bonds; W. F. Hart, W. C. Dawkins, P. L. Laughlin and W. W. Glosser.

Warren Tool & Forge Company, Warren, Ohio; adzes, claw-bars, lining bars, picks, spike mawls, sledges, hammers, track chisels, wrenches; H. C. Mull, M. J. Konold and J. D. Robertson.

Western Wheeled Scraper Co., Aurora, Ill.; model of automatic side dump car and photographs; H. P. Henderson and Thomas Dugan.

William Wharton, Jr., & Co., Inc., Easton, Pa.; insulated gage rod, conveyor rollers, photographs of manganese frog, gas cylinders; W. H. Allen and J. A. Millholland.

Woolery Machine Company, Minneapolis, Minn.; motor car engines and parts; J. T. Stephenson.

Wyoming Shovel Works, Wyoming, Pa.; track shovels, spades, scoops, scuffle hoes and picks; H. T. Potter, Stanley H. Smith and E. L. Ruby.

Non-Exhibiting Members

American Steel & Wire Company, Chicago.
Morden Frog & Crossing Works, Chicago.
National Malleable & Steel Castings Company, Cleveland, Ohio.
Railway Purchases and Stores, Chicago.
St. Louis Frog & Switch Company, St. Louis, Mo.
Pettibone-Mulliken Company, Chicago.
Mechanical Manufacturing Company, Chicago.
Cleveland Frog & Crossing Company, Cleveland, Ohio.
James C. Barr, Boston, Mass.

At the annual meeting of the Track Supply Association the following officers were elected for the ensuing year: President, K. J. Eklund, Mudge & Company, Chicago; vice-president, L. C. Ryan, Oxweld Railroad Service Company, New York; secretary-treasurer, W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y.; and directors, F. M. McAllister, Kalamazoo Railway Supply Company, Kalamazoo, Mich., and W. W. Glosser, Verona Tool Works, New York.

R. S. Parsons Addresses Traveling Engineers

Erie Officer Stresses Importance of Traveling Engineers' Function as Teacher and Leader

THE THIRTY-SECOND ANNUAL CONVENTION of the Traveling Engineers' Association was held September 16 to 19, inclusive, in the Hotel Sherman, Chicago. The feature of the opening session was the address by R. S. Parsons, vice-president of the Erie, with headquarters at Youngstown, Ohio.

Mr. Parsons' Address

Mr. Parsons spoke in part as follows:

We are all members of a great railroad family in which there exists a family feeling to a greater extent than is found in almost any other industry. Railroad men speak the same language and while many of them leave the service for positions in other lines of industry they almost all have an attachment for the railroad business which never dies. The traveling engineer must know railroading and, in addition, he must be a pedagogue. It is his duty to take untrained firemen, who perhaps have little incentive to like their work and strive for advancement, and mold them into capable, reliable enginemen. There is no higher call to duty than that of being an educator, and traveling engineers must study to devise ways and means of carrying on this educational work most effectively. Enginemen and firemen must be studied and accorded individual treatment to a considerable extent since, while one man may respond to abrupt, comparatively rough treatment, another must be handled more diplomatically in order to obtain the desired results.

The duty of a traveling engineer does not end when enginemen are taught to save a shovelful of coal every mile, highly desirable as this accomplishment is. Engine crews must be instructed and guided as opportunity offers in their personal matters and the traveling engineer, in view of his position, possesses an opportunity along this line surpassed by that of no other class of railroad officer.

Traveling engineers are confronted with many mechanical fallacies on which they are compelled to pass and which require the exercise of expert judgment and care on their part. There are also other fallacies which the traveling engineer can and should combat. Every opportunity should be seized upon to point out to engine crews correct ideas regarding capital and government. Capital is not the monster depicted by some of our daily papers, holding a lash over the backs of the poor. It does not consist as some people think of certain portly gentlemen in Wall street. If you have a wheel, I have an axle, another man has a steam cylinder and another a smoke stack, and we get together to combine these units in a single locomotive, that is capital.

In the past government has swung from autocracy through democracy to "mobocracy." Either extreme is undesirable. The Constitution of the United States was framed by the wisest body of men in their own and perhaps any time. It is our lighthouse and undoubtedly the prime factor responsible for the present growth and prosperity of the nation. By the terms of this constitution our government is a republic, and that means that we elect representatives to act for us only as long as their actions suit us. We are confronted today with people who propose to alter vital elements of the Constitution. We have vested authority in the courts which should be left alone and not made subservient to the legislature. How long would a ball game last if the umpire must refer every decision to the grand stand? In other words, having chosen our umpire we must leave him alone subject to recall.

Some railroad employees believe that their condition will be better under government ownership of the railroads. The traveling engineers as a body must get to the bottom of this thing, find out what their men are thinking about and then bend every effort to direct the men's thinking along correct lines. In view of the daily connection of traveling engineers with engine crews they have an unexcelled opportunity for constructive work in this direction. The prosperity of the country, dependent upon that of the railroads, is in the balance.

Address by President Howley

In his address at the opening session, the president, T. F. Howley (Erie), spoke in part as follows:

It is particularly gratifying to me and the other officers

of the association to note the large attendance of our membership. This tends to signify your interest in the personal benefits that are to be derived by each one of us through the papers to be presented, the discussions that will follow and the opportunity afforded, through the intermingling of men, all engaged in the same line of business, to learn how other railroads handle problems such as may perhaps be now confronting you.

It also seems to indicate an interest in this association on the part of the higher officers of the railroads we represent, as is evidenced by their granting us permission to attend this meeting and an apparent belief on their part that our work in the duties assigned to us is going to be improved thereby and the results attained in locomotive service are going to be bettered through such attendance. This is something our association can well be proud of as it bespeaks that co-operation between officers so necessary to secure concrete results.

Changes in Locomotive Construction

Constant changes being made in locomotive construction, including equipment and improved methods of operation require the traveling engineer to be constantly on the alert in order to keep abreast of the times, and probably in no other way can this be better accomplished than through the annual meetings and interchange of views as carried by this association, composed as it is of the traveling engineers of almost every railroad in the country.

The motto of our association, "To improve locomotive service on American railroads," backed up by 31 years of earnest endeavor to keep our members up to date in relation to the latest changes in locomotive construction, appliances, improved methods of firing, best methods of handling on the part of enginemen with a view of securing greatest economy in performance and increased safety in operation, cannot well help but appeal to the higher officer who is endeavoring to obtain the best results on the railroad which he is assisting to operate.

It is the aim of this association as you know, to present at each meeting a number of papers dealing with the latest information obtainable, both in connection with locomotive features in use for years past and also in regard to newly brought out devices and methods intended to improve locomotive operation. Thus from time to time we have papers having reference to such old time devices as lubricators and injectors tending to keep us up to date in connection with improvements in such devices, papers dealing with breakdowns of locomotive machinery and failures of various appliances and the most practical ways of overcoming them, papers on safety devices, examinations of enginemen and firemen and papers dealing with such new devices as the booster, feed water heater, boiler syphon, etc.

Value of Discussion

In order that each one of us may gain as much useful knowledge during our present sessions as is possible, make a wholehearted effort to discuss each paper thoroughly here in the open meeting where the committee presenting it will have the opportunity to tell you how and why they reached their conclusions. Give us the benefit of your individual knowledge and experience as other members will give you the benefit of their experience. Then we can each of us return to our homes feeling that the improvement we can show in our work through better understanding and more complete knowledge will not only justify to our superiors the expense involved in our attendance at this meeting but will assist in strengthening in their minds the belief that it is to the interest of every railroad to send its traveling engineers to these conventions if they would keep them informed as to the latest developments in connection with locomotive equipments and operation.

Report on the Work of the Traveling Engineer

How can the work of the traveling engineer be made more effective, and can the usual number of traveling engineers properly take care of the duties expected of them? Every traveling engineer must first give consideration to the fact that any railroad has only one source from which dividends on capital invested can be expected, and that is transportation. With this thought first in his mind he should go hand in hand with his master mechanic, who is responsible for the turning of sufficient locomotives to move all business with dispatch; he should also know, from his knowledge of the transportation department, approximately the volume of business to be handled.

In our opinion the following are the essentials necessary for a traveling engineer to make his work effective: Diplomacy, good judgment, ability to properly handle men, firmness, fairness with both company and men, cover up nothing. Frequent and continuous riding of engines in his territory to become acquainted with all operating conditions and the performance of enginemen and firemen, co-operating with all departments of the railroad and ability to impart knowledge.

Diplomacy, if used properly, will get more and greater results than the use of czarish and mandatory methods. Men must be reasoned with and shown in a pleasant, courteous way their faults, and the way to get the best results is by instruction in the manner of handling the various appliances efficiently, and being a help in this way will get their co-operation to a high degree.

Good judgment should always be employed and never should impatience or personalities be allowed to enter into its being exercised in an honest manner.

Ability to properly handle men is a result of personality and a desire to do it. The traveling engineer will come in contact with all kinds of men who have varying dispositions which necessitates the employment of various methods of handling.

When right there should be no swerving from action no matter who should be affected. Vacillation and indecision show lack of ability and knowledge of duties.

In all cases fairness to both men and company is essential to co-operation and successful operation. If one is inclined to be absolutely fair in all his dealings he compels respect and admiration from both men and company, and this goes a long way in making his success certain. When in doubt, say so and express an honest opinion.

A fitting motto would be: "I have no friends to reward, nor enemies to punish." Independent of personal likes or dislikes the facts should always be disclosed, even though yours is the fault.

Frequent riding of engines is necessary both for operation and equipment, for it is in a traveling engineer's report that the mechanical department gets a store of valuable and exact information on which to work to the betterment of equipment and to remedy inefficient conditions. The operation, delay and failure report should be thoroughly and continuously watched, so that corrections can be made. Frequent contact with terminal officers and men, giving them the benefit of your experiences and your findings of results of work that they have done, gets their co-operation and it is surprising how much greater interest they take in their work. We believe that a road foreman of engines should be intimately acquainted with every employee at a terminal from the flue cleaner to the general foreman. He should spend a half hour with them at their work occasionally and show them how important their work is to have the engine in perfect condition when dispatched. After you have had some special work done by any class of workman and after you have ridden the engine, make it a point to meet him and

tell him the result of his work and compliment him if it was successful, and if otherwise, show him in a nice friendly but instructive way where he could have done better and you will have a man looking for you every time you walk through the roundhouse. It is by this method that failures are averted and investigations rendered unnecessary.

Information should be given all departments of the railroad as you find it and suggestions and criticisms cheerfully received and considered. Call on your train dispatchers frequently and give them the benefit of your experience and judgment, and you will find that you are most welcome at all times. It is surprising how much information you will both get that is helpful to transportation, and that is what we are aiming at.

It is easy to write about what the traveling engineer should do, and specify the qualifications he should have, but it is one thing to desire those qualifications, and entirely another and much harder proposition to educate ourselves up to the requirements. The first thing is to place ourselves where we can be educated, where we can discuss our experiences with other men in our line and with specialists in the many different items with which we have to deal—and where can this be better done than at the traveling engineers' convention?

At the present time on nearly every road in the country there is a sufficient number of new appliances to require nearly all the traveling engineer's time if he desires to describe them and educate the engine crews on the operation of these devices, to say nothing of the opportunity that lies before him of instilling into the minds of the engine crews the economical and efficient operation of the locomotive and train. But before we can instruct and increase the interest of the men, we must be instructed and have our own enthusiasm increased, and after working on the road our vigor will decrease unless we go again for further help. This convention is our teachers' institute, where the teachers are gathered at periodical times to receive instructions, and any railroad system that neglects sending its men to these conventions is neglecting to use a valuable tool to the furtherance of its operating development.

A traveling engineer when on the line of road should be in a position to speak and act with authority to all classes of transportation employees. His authority to take locomotives out of service when necessary should be treated with the same significance as that of the federal inspector. He should check engineers in their inspection of engines and insist on intelligent work reports; he also should have authority to follow engines through the terminal and see that the necessary work is done, which will be a step in the right direction to eliminate repetitions on the work reports.

In our opinion the usual number of traveling engineers cannot properly look after the duties expected of them.

The report was signed by E. R. Boa, (N. Y. C.), chairman; D. I. Bergin, (Wabash), T. J. Hartnett, J. T. Sullivan, (B. R. & P.), P. J. Talty, (L. V.).

Discussion

In the main, comments on this paper were favorable, although some criticism developed. One of the members said that detailed, accurate knowledge of the work was of first importance to the traveling engineer and this characteristic should be placed ahead of diplomacy which was given first place in the paper. It was suggested that the second greatest need was for systematic handling of the work, and third, that traveling engineers be relieved of the great amount of miscellaneous clerical work which takes so much of their time and makes them in effect clerks, investigators and office men.

R. Collett (St. Louis-San Francisco) said that the road foreman of engines or traveling engineer is primarily a custodian of the fuel bill. He indicated that enginemen who are careful to secure the most efficient use of lubricating oil are usually careful in fuel matters also. One of the concrete suggestions brought out in the discussion was that by Mr. Collett to the effect that on the St. Louis-San Francisco each road foreman of engines has a fuel clerk who looks after many details other than fuel records, thereby allowing the foreman to spend a greater proportion of his time on the road.

Another member said that the average traveling engineer rides the best trains with the best crews 50 per cent of the time at the direct request of the higher mechanical officers, and, as a consequence, little time is available to get directly in touch with the new men and train them. In connection with the authority of traveling engineers and their responsibility for the condition of locomotives, it was pointed out that the traveling engineer is supposed on many roads to see that locomotives are ordered out of service before defects develop which will occasion the issuance of Form 5 by federal inspectors.

Road foremen of engines are usually former enginemen and committee men. When promoted they should retain the confidence of their former co-workers and, when this result is achieved, it will not be necessary for them to ride every locomotive every month. They will in effect have many assistants among the engine crews, who will not only be willing but anxious to let them know when conditions can be improved.

Another point strongly emphasized was the need of explaining to every engineman or fireman that his failures are brought home to and reflect on the traveling engineer as much as on himself. This form of appeal to his manhood is effective in nine cases out of ten. Traveling engineers should cultivate the enginehouse forces as mentioned in the paper and when a man does a good job make it a point to meet him personally and tell him so.

Perhaps the most important point made in the discussion was the vital need of giving road foremen of engines and traveling engineers both the authority and the machinery for handling their work in order that the best results may be secured.

[An account of the remainder of the proceedings of the convention of the Traveling Engineers' Association will appear in a later issue of the *Railway Age*.—EDITOR.]

P. & A.

The Prince of Wales With His Party at Manhattan Transfer, N. J., En Route to Long Island After Calling on the President

Improved Tank Locomotives for the Queensland State Railways

TO MEET THE INCREASED suburban service demands of the rapidly growing capital port of Brisbane, Australia, ten improved tank locomotives illustrated have recently been placed in commission on the Queensland State Railways. These locomotives are of the 4-6-4 type and are constructed in accordance with the designs of J. E. Robinson, works manager, Ipswich railway shops, assisted by R. J. Chalmers, assistant works manager and chief draftsman.

In the design especial consideration was given to operating conditions in Queensland, particularly with regard to the 3 ft. 6 in. gage and its restrictions on dimensions and weights. The locomotive boiler is built with a copper firebox and micro-copper or copper-coated steel tubes. It is equipped with a Robinson, 16-element superheater and inside admission piston valves. The valve motion, of the Walschaert type, was designed to give even steam distribution when running either way and to afford maximum accessibility and convenience in repair.

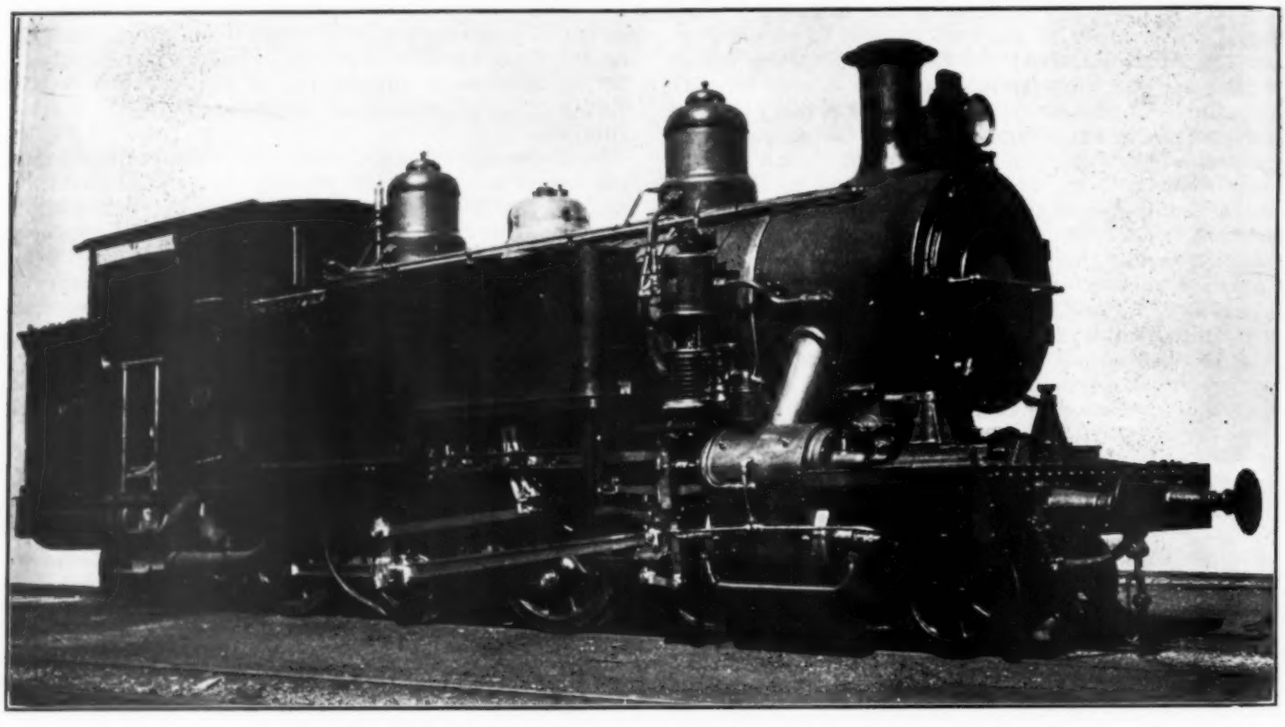
The cylinders and piston valves form a "bloc" interchangeable with the 4-6-0, mixed traffic locomotives, and the 8-in. piston valve is also standard to other types. The low steam dome is the first of its kind to be used in Australia, a departure from standard practice said to be giving satisfaction. Separate sandboxes are provided for running either way.

Westinghouse air brakes with a 10-in. air compressor and ample reservoir capacity are provided in order that these locomotives may be used on occasion to haul the relatively long heavy freight trains loaded with coal to the port. Hydrostatic lubricators are used with pipes to the cylinder and outside steam pipe on each side of the locomotive. This is in accordance with common American practice.

The weights on the coupled wheels are compensated, totaling 71,000 lb. The total weight of the locomotive fully loaded is 116,900 lb. and empty approximately 98,000 lb. The capacity of the tank is 1,200 gal. and the locomotive will carry three tons of coal. A roomy cab is provided; also hand-operated rocking grates and a water-sprayed, self-emptying ashpan with sliding doors operated by a pneumatic cylinder controlled from the cab. Of the two safety valves one is also air controlled from the cab.

The locomotives are giving excellent results in service, handling the heavy traffic on schedule and eliminating delays previously existing, due to water stops, etc. Another order of ten of these locomotives is now under construction at the Ipswich shops.

The following is a list of the principal dimensions:



A 4-6-4 Narrow Gage Suburban Locomotive for Service in Australia

Gage	3 ft. 6 in.
Cylinders	17 in. by 22 in.
Piston valves	8 in.
Steam pressure	160 lb.
Diameter of driving wheels	4 ft. 3 in.
Diameter of truck wheels (front)	2 ft. 4 in.
Diameter of truck wheels (rear)	2 ft. 2 in.
Tractive force	15,460 lb.
Weight on coupled wheels	79,500 lb.
Weight in service	130,900 lb.
Adhesive factor	5.14 per cent
Water	1,200 gal.
Coal	3 tons
Wheel base (rigid)	10 ft.
Wheel base (overall)	29 ft. 6 in.
Heating surface, tubes	730.3 sq. ft.
Heating surface, firebox	103 sq. ft.
Heating surface, elements	186.8 sq. ft.
Total heating surface	1,020.1 sq. ft.
Grate area	16.6 sq. ft.

THE MISSOURI PACIFIC has adopted a plan in its mechanical department whereby employees are invited to make suggestions to bring about greater efficiency and convenience in doing their work. Boxes are installed in the departments and blanks are provided for the employees. The suggestions are acted upon by two committees, one a production committee composed entirely of employees and an executive committee composed of three employees, the superintendent and the production engineer. The production committee first considers all suggestions and if they are considered worth adoption passes them to the executive committee for final disposition.

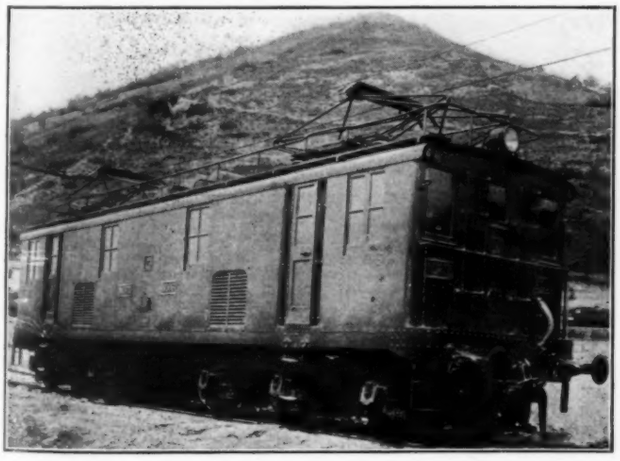
Freight Train Hauled by G. E. Locomotive on Bridge Near Fierros

The Spanish Northern Railway Electrification

New Motive Power is an Answer to Problems Presented by Tunnels and High Cost of Fuel

PRIOR TO 1914 Spain received most of its coal from the British Isles, but during the late war shipments were greatly reduced and finally stopped entirely. The shortage caused by the cessation of foreign shipments was keenly felt by all the large cities in Spain, especially Madrid.

Mines were put in operation which before were considered unprofitable. Particularly was the product increased



One of the 90-Ton, 3000-Volt Electric Locomotives Built by the General Electric Company

in the Asturias region in the Cantabrian mountains which parallel the north coast. The amount of coal which could be shipped to the center of Spain was limited by the capacity of the railways leading out of the region. In fact much of the coal is shipped north to the port of Gijon, whence it is transshipped by boat to other domestic ports.

The Northern Railway of Spain has a single track line from Gijon on the coast passing south through Oviedo and Leon and joining the main line from France to Madrid at Venta de Banos. The limiting feature of this line is the section between Ujo, which is 870 ft. above sea level, and Busdongo just over the ridge on the southern slope of the mountains, which is 4310 ft. above sea level, a total distance of 38.6 miles.

It is this section which is now being electrified, as the initial step of an extensive program. In this distance the road goes through 71 tunnels, with an aggregate length of 16.8 miles most of which is on curves. The longest tunnel, La Perruca, a short distance north of Busdongo, is on tangent track and has a total length of 1.91 miles. The longest tunnel on the curved sections is El Orria, which is 66 miles long and makes about three-quarters of a complete circle.

This unusual stretch of railway work was built about 40 years ago under the direction of a prominent Spanish engineer. Here in Spain, as in Russia, the width of the track gage is 5 ft. 6 in., while in France and the rest of Europe the American standard of 4 ft. 8½ in. is almost universally used.

The initial contract for this electrification was awarded to the Sociedad Iberica de Construcciones Electricas, the representatives in Spain for the International General Electric Company, and provides for six 3000-volt locomotives, two 2-unit 3000 kw. substations and overhead line material for the complete project. In addition to the above, six additional locomotives have been ordered from the Westinghouse Electric & Manufacturing Company. For the present, power is purchased from the hydro-electric system of the Electra de Viesgo Company at 30,000 volts, 3-phase, 50 cycles. This energy is transmitted over the lines of the rail-

way company to substations located at Pajares and Cobertoria.

The present schedule with steam operation consists of from 11 to 12 trains in each direction per day. It is expected that with the substitution of 12 electric locomotives for steam power the normal train movement can be considerably increased. This will release 28 steam locomotives for other service. The locomotives which the General Electric Company has constructed for this service are of the swivel equalized truck design and weigh 89.5 tons, (81.4 metric tons) all on the driving axles. With this type the pulling stresses are transmitted through the platform of the locomotive instead of through the truck frames as is the case with the articulated type.

The cab is supported through center plates on two three-axle trucks. A G. E. 255-B motor is geared to each of the six driving axles, giving a total capacity of 1550 horse power. Hauling a 330-ton train up the 2 per cent grade at a speed of 21.7 miles an hour requires a tractive effort of 22,000 lb. The maximum speed on level tangent track is 24.9 miles an hour with a train of 1500 tons, while the maximum emergency speed of the locomotive is 37 miles an hour.

The auxiliary apparatus and control mechanism are housed in the box type cab which extends the full length of the locomotive. The platform is built up of structural steel members which are securely braced and riveted and covered by a steel floor ⅜ in. thick. At each end, an operating compartment for the engineer is partitioned off from the apparatus room in the center. Current is collected by either of two G. E. slider type air raised gravity lowered pantographs mounted on the roof.

When descending the grade, the locomotive is held back by regeneration, five of the motors becoming generators while the sixth generates their exciting current. The locomotives in addition are equipped with vacuum brakes which are only used in emergencies and in bringing the train to a complete stop. On this system, though practically all of the passenger coaches are equipped with brakes, the freight cars have only individual hand brakes which must be applied by the trainmen when a braking effort is required in excess of that necessary to slip the wheels of the locomotive. In actual freight service it is the practice to have a man stationed on every fourth car to be ready, if necessary, to assist in braking the train. At present an average freight train will consist of from 28 to 36 freight cars of 5 tons capacity, which requires a large crew.

The normal train movement is "loaded" up-grade (from Ujo to Busdongo) and "empty" down-grade, although loaded trains up to rated capacity of the locomotive are also handled on the down-grade.

RATINGS, DIMENSIONS AND WEIGHTS OF SPANISH NORTHERN RAILWAY LOCOMOTIVES

Electrical Data

Nominal voltage of system	3,000 volts
Tractive effort continuous	26,500 lb.
Tractive effort 1 hr. blown	27,100 lb.
Tractive effort at 30 per cent coef	53,700 lb.
Total h.p. continuous	1,550
H.p. 1 hour	1,550
Speed continuous	21.9 m.p.h.
Speed 1 hour	21.6 m.p.h.
Number of motors	6
Type of motors	255-B
Gear ratio	4:1 or 72:18

Mechanical Data

Track gage	5 ft. 6 in.
Width	9 ft. 8½ in.
Length	46 ft. 0 in.
Max. rigid wheelbase	11 ft. 6 in.
Dia. of drivers	39¾ in.
Total wheelbase	35 ft.
Number of driving axles	6
Height over trolley locked down	13 ft. 5 in.

Weights

On drivers (total weight)	179,000 lb.
Weight per driving axle	29,830 lb.
Weight of electrical equipment	85,000 lb.
Weight of mechanical equipment	94,000 lb.

Motors

The motors are of the commutating pole box type with the air inlet at the top. Ready access to the armature, pole pieces and field coils is provided through the pinion end. Large handholes allow easy inspection of the commutator and brushholders. The bearings are waste lubricated and an ample supply of oil is insured by auxiliary oil wells.

Louvres in the sides of the cab permit the entrance of air to the whole interior of the apparatus compartment. The blower drives the air into the horizontal duct between the center channels of the locomotive platform. These ducts open through hollow center plates and flexible duct connections into the truck transoms, which in turn connect with ventilating openings in the motors. The series method of ventilation is used, that is the air enters the top of the motor frame at the pinion end, is forced over the armature and field coils returning through the commutator and armature core to the pinion end, whence it is expelled through holes

Overhead Construction at the North End of Campomanes Yard, Showing Line, Anchor Poles, Sectionalizing Switch, and in the Distance the Station Signal

in the framehead. These motors are designed for operation at 1000 volts per commutator and are insulated to operate three in series on 3000 volts.

The motor has a continuous rating for 120 deg. rise by resistance of 258 hp. at 1000 volts. The gears and pinions are made of oil tempered steel and have a ratio of reduction of 72 to 18 teeth.

Control

The control is electro-pneumatically operated and is intended for non-automatic single unit operation with the following connections: One group of six motors in series, or two groups of three motors in series.

Fourteen steps are provided for acceleration with six motors in series, ten steps with the two groups of three in series connected in parallel, and thirteen steps in regenerative braking. In starting, the six motors are connected in series with the line and an adjustable resistance. This resistance is short circuited as the controller is moved from point to point

of the series position of the main handle until all the resistance is cut out and the motors are all in series directly across the line. Then as the accelerating handle is moved to the first series parallel notch of the controller, a pneumatically operated transfer switch reconnects the motor circuits into the series connection with the resistances again in series. The operation is then repeated until the motors are in full series-parallel position.

All the motor switching is performed by air operated contactors which short circuit the resistance. They are closed

The Cobertoria Substation

by air confined in a cylinder operating against a piston, and opened by the action of a heavy spring against the piston. An arc chute and blower coil insure proper rupturing of the arc. An electro-pneumatically operated reverser is interlocked with the line contactors.

For speeds above the full series and full parallel connection, two reduced field positions are provided by means of which the motor speed is increased. Both reduced field positions can be obtained in either of the full running positions, by means of the thirteen steps which are provided, a speed range of from 12.5 miles an hour to maximum operating speed of the locomotive is obtained.

The regenerative braking employs the same controller, contactors, and resistors as are used during motoring. This means simplicity of control and economy of apparatus. A balancing resistance is used for the protection of the motors to stabilize the excitation and to compensate against line voltage changes. When starting to regenerate, the main handle of the master controller is moved to the off position, and the selective handle then thrown to the braking connection. The same handle is used to select the motoring, reduced field and the regenerative braking connections. Upon setting the selective handle for the braking connection, a transfer switch is thrown by means of a pneumatic cylinder. This rearranges the circuits to give the connection necessary for regenerative braking. The main handle may then be notched up until the desired braking torque is obtained. The master controller is mechanically interlocked so that no false manipulation is possible.

Auxiliary Equipment

Power for the operation of the control circuits, lights, cab heaters, air compressor, exhausters and for charging the storage battery is furnished by a 10 kw. 65-volt generator directly connected to a 25 hp. 3000-volt motor. A blower mounted on the extended shaft of the motor generator set furnishes air for the ventilation of the traction motors.

As a reserve a storage battery of a capacity sufficient to operate the control, an exhauster and the lighting system for one hour is provided. A reverse current relay is placed in the circuit between the battery and the generator to prevent the discharge of the battery.

The compressor, which furnishes air for the control, pantograph, whistles and sanders, is operated from the 65-volt circuit and is controlled by a governor which starts or stops the compressor automatically, thereby maintaining the pressure between certain predetermined values.

Two exhausters, both of which operate from the 65-volt

Type of Steam Locomotive Used on Passenger Trains. Weight on Drivers is Approximately 90,000 Pounds

this is accomplished by moving a selective handle on the master controller. This controls contactors which connect an inductive shunt across the field. In emergencies three of the motors may be cut out and the locomotive operated with the remaining three.

Regeneration is accomplished by using one motor for exciting its own field and the fields of the other five motors. The remaining five motors are connected in series and regenerate to the line in proportion to the field excitation. Only one combination of motors is used for regeneration, but

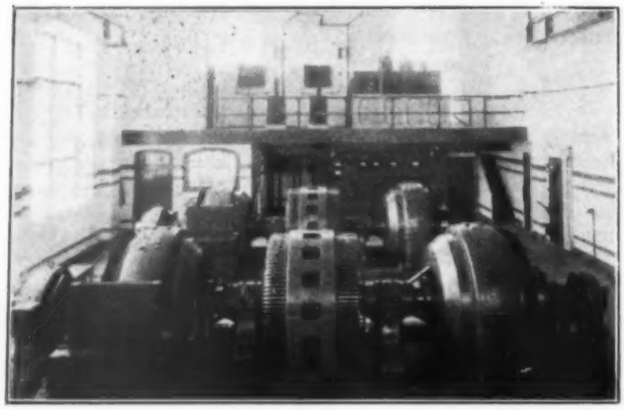
circuit, supply the vacuum brake system on the locomotive and the passenger coaches. One exhauster operates normally at slow speed, while the other is normally shut down.

A high speed circuit breaker is connected ahead of all other apparatus in the main motor circuits. In case of short circuit on any part of the apparatus, or a heavy overload, the circuit breaker trips and opens the circuit. The high speed with which the breaker opens greatly reduces the liability of damage from either short circuits or heavy overloads. In addition to protecting the locomotive it also

protects the generating units in the substation by quickly reducing any heavy power demands due to grounds or overloads. The breaker has no mechanical latches or triggers. It is tripped electro-magnetically. The blow-out consists of a powerful magnetic field which combined with the narrow arc chute quickly breaks the arc caused by opening the circuits. An overvoltage relay is connected across the regenerating motors in series with the high resistance, and is arranged so that when the motors generate a predetermined voltage this relay opens, tripping out the high speed circuit breaker and dropping out the resistance contactors during regeneration so as to open the field of the motors. This furnishes protection against overvoltage in case of loss of trolley or substation.

Substations

Power from the 30,000-volt lines is converted to 3000 volts direct current in two substations, one of which is located at Cobertoria 6 miles from Ujo; the other is at Pajares which is the same distance from Busdongo, the southern end of the electric zone.



Interior of Cobertoria Substation, Showing Two 1500 Kilowatt Synchronous Motor Generator Sets, High Speed Circuit Breakers and Switchboards

Each of these stations contains two, three-unit, four-bearing 1500 kw. 3000-volt d. c. motor generator sets with the necessary transformers and switch gear. Provision is made for the future installation of a third unit in each station. The outgoing positive feeders are amply protected by the addition of high speed circuit breakers located in each line.

Two three-phase oil-cooled transformers rated 30,000/3500 V., 1900 kv-a, 50 cycles are installed in each of the two substations. Four 2½ per cent taps are provided in the low voltage winding to compensate for variation in the transmission line voltage and 50 per cent starting taps for starting the motor generator sets.

The direct current generators are designed for 1500 volts per commutator and are permanently connected in series for 3000-volt operation. They are separately excited from a small 125-volt generator mounted on one end of the set. The series field of each main generator is designed to provide flat compounding from no load to 50 per cent overload. They are equipped with commutating poles and compensated windings to insure sparkless commutation under all load conditions.

Excitation for the synchronous motor is provided by a second 35 to 150-volt direct current generator placed on the opposite end of the set. It has a series winding which carries the 3000-volt line current so that the motor field excitation varies in proportion to the load on the set. This insures correct power factor with varying loads, and also insures stable operation under heavy overloads. These sets handle 150 per cent load for 2 hours; 300 per cent load for 5 minutes. They also operate inverted to take care of regeneration.

Overhead Line Construction and Bonding

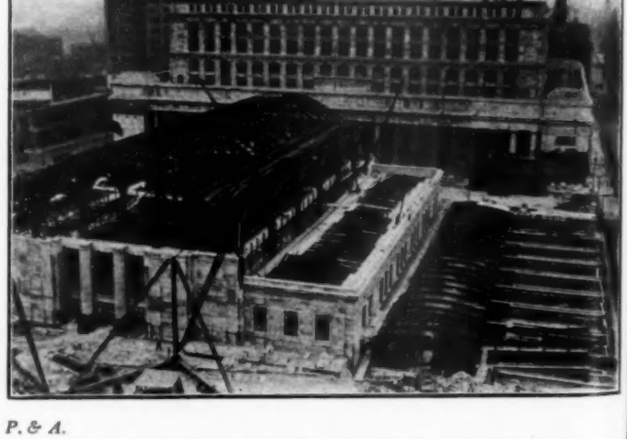
The overhead construction is of the modified flexible catenary type designed by the General Electric Company and installed under supervision of the S. I. C. E. Co. This overhead is known as the twin catenary type and comprises two 4/0 copper wires flexibly suspended side by side from the same ½-in. diameter steel messenger by independent loop hangers. These supports are spaced 15 feet apart and are alternately connected to each contact wire. Thus the distance between adjacent hangers is 7½ feet. With this construction, due to the four contacts secured by the double pantograph collector and the twin trolley wire, current is collected under all conditions without visible sparking. Porcelain insulation is used throughout. Steel poles spaced at intervals of 150 feet on tangent track with reductions on curves support the brackets carrying the messenger. Brackets on the poles carry the positive feeder and the negative return wire, while in the tunnels these are carried on iron bracket supports.

It is possible on account of the unusually circuitous route which the track follows to improve the distribution by running the feeder across the ends of several loops which are made necessary to conform to the limiting grade. One of these cut-offs is 1.25 miles in length cutting off about 4.5 miles while two others about 0.3 miles in length join the ends of another loop of about the same length.

As it was deemed advisable to put in concealed bonds, it was necessary to install special fish plates throughout the electrified section.

Each rail joint is bonded by 12-in. 4/0 copper bonds, and every 1000 feet a 4/0 steel cross bond 76 in. long is put in.

To protect the system, sectionalized construction is used. Due to the character of the country, the mountains, curves and tunnels, and the fact that normal operation of the railroad must not be interfered with, all construction was done at night. The copper wire used in the work was drawn and stranded at Cordoba, a noted manufacturing center in the south of Spain. Officials of the Spanish Northern Railway designed and installed the substations and overhead line material. In this work they were assisted by the engineering staff of the S. I. C. E.



P. & A.

New Chicago Union Station Nearing Completion

The Protection of Railroad Grade Crossings*

A Discussion of the Most Effective Means of Controlling Traffic and Reducing Accidents

THE HIGHWAY-RAILROAD GRADE CROSSING has been the subject of legislation almost constantly since the opening and operation of the first railroads in the United States. As early as 1835, when there were less than one hundred miles of railroad in the entire state, Massachusetts passed a law, reading as follows: "And if the select-men of any town wherein any turnpike, highway or town-way so crossed by any railroad in situate shall be of opinion that the foregoing provision (crossing signs) is not a sufficient security to the public, gates should be erected across the railroad and that an agent should be stationed to open and close the said gates. Select-men may request said railroad in writing to erect said gates." The priority of right for the movement of trains over crossings as compared to pedestrian or other vehicles was early recognized and with it went the obligation of the railroads to provide suitable crossing signs.

Since this time there has been much legislation relative to grade crossing protection, elimination, etc., the usual tendency of these laws being to place upon the railroads the responsibility for the safety of grade crossings, ignoring the fundamental fact that, under the common law and the different railroad's franchise rights, the railroad had superior rights in operating its trains over grade crossings, and that the trains were not required to stop at grade crossings.

Some Studies of Grade Crossing Accidents

The average cost of eliminating a grade crossing ranges from $75,000 to $100,000. At the end of 1923 the latest figures available indicate that there were 356,362 grade crossings in the United States. To eliminate these crossings, using the lowest figure of $75,000 per crossing, would cost approximately 19¼ billion dollars. A proposal to invest such a sum to eliminate all grade crossings would be economically absurd.

A more practical measure therefore is to make the drivers of automobiles more careful. Lessons taught by the Careful Crossing campaign show that approximately 97 per cent of the automobile drivers are reasonably careful and that many of the grade crossing accidents are due to gross carelessness, and in frequent cases, to criminal carelessness on the part of the other 3 per cent. During a four months' Careful Crossing campaign on the Pennsylvania railroad, during the summer of 1922, the following data were gathered:

There were 682 crossing accidents resulting in 90 fatalities and 150 injuries. Of these 682 accidents, 487 occurred in broad daylight and 195 at night, from which an inference may be drawn that an inability to see the railroad in the distance is not as much a factor as the failure of auto drivers to be careful. About one half of the accidents involved passenger trains and one half freight trains. Approximately 60 per cent of the trains involved were running less than 20 miles per hour, indicating that the failure of auto drivers to keep a constant lookout ahead and to have their cars under control is a greater factor in crossing accidents than the speed of the trains. An auto with efficient brakes, running 20 miles per hour can be stopped easily in 25 ft. It is significant that 29 per cent of the accidents and 17 per cent of the fatalities involved trucks, although auto trucks represent only 11 per cent of the total number of automobiles in use. It is doubtful whether the public in general as well as the owners of automobile trucks realize that the responsibility of auto truck drivers on a public highway from a safety standpoint is equal to that of a locomotive engineer.

One feature of the crossing accident situation deserves the close attention of the great number of people who travel on passenger trains and that is the liability of serious injury or death to passengers on trains as a result of train derailments due to crossing accidents. There were five train derailments on the Pennsylvania System from crossing accidents during the four months' period.

An accident occurred recently in which an automobile truck, while moving over a railroad crossing, ran off the crossing planks and down between the rails of a high speed main track. Before it could be moved it was struck by a passenger train running 60 miles per hour, derailing the train and causing damage to track and railroad equipment to the amount of $7,410. Sixteen minutes before this accident the same automobile collided with a touring car for which the driver was arrested and fined. It was also developed that the driver had been drinking prior to the accident.

Seven fatalities and 17 injuries were due to drivers of automobiles attempting to beat trains running at various speeds over the crossings. Fourteen fatalities and 7 injuries occurred at crossings protected with crossing bells which were in good order and ringing at the time of the accidents. Sixteen accidents were attributable to defective brakes although it is probable that this was the indirect cause, as it is impossible to ascertain the condition of the brakes when automobiles are demolished. As a sidelight on this factor of defective brakes, it may be stated that during January, 1923, the Police Department of New York City inspected 4,000 cars and found 800 with defective brakes and of these 800, 142 had inoperative brakes and the drivers were arrested.

Seven accidents and three fatalities were attributable to intoxication although the number of other cases due to this cause was not detected on account of the drivers being killed. There were 280 cases of automobiles running through or into crossing gates, but not into trains. These accidents are directly attributable to failure on the part of the automobilists involved to exercise ordinary precautions, as a crossing gate is visible for a long distance and the purpose for which it is intended is thoroughly understood.

If further data were required to demonstrate the outstanding fact that nearly every auto accident at highway crossings is attributable to lack of care on the part of the driver, the fact that in a period of four months on the Pennsylvania System, 70 instances were recorded of automobiles running into the side of trains should be sufficient. These 70 accidents resulted in 14 deaths and 22 injuries. In many instances the automobile came in contact with the train some time after the head of the train had passed over the crossing. A case is reported on another road of an automobile running into the caboose of a long freight train. When an automobile runs into the side of a train it is usually the result of excessive speed or defective brakes and perhaps in some cases lack of experience in driving.

It is, therefore, important for the general public, who, on the whole, are reasonably careful, to bear in mind that the most effective means for preventing automobile accidents of all kinds, is not the elimination of highway crossings and improving conditions generally on the highways, as important as this may be, but the elimination of the reckless drivers who make up a very small percentage of the total, but who are responsible for nearly all the accidents. To bring this

*Abstracted from a report presented before the Metropolitan Track Supervisors' Club, New York City, on August 9.

about, all reasonable means within the power of the town, city, county and state authorities should be employed.

Above all and for their own protection a demand by the general public for sane and safe automobile driving should be developed. This will accomplish the desired result more effectively than anything else. Reasonable regulation will work no hardship upon 97 per cent of the drivers of automobiles. It will, rather, save them from possible death and injury, and relieve them from being classed among the criminally careless. At the same time all automobile applicants for licenses to drive should be given an examination on color, sight and hearing.

Lack of Standardization in Laws

We find ourselves at the present time in a situation where numerous activities are devoted to the prevention of accidents. The various states have passed laws providing for protection or establishing commissions which are given the authority to compel the railroads to take action which they deem necessary. The railroads themselves, individually and collectively, are devoting their efforts, first, to meeting in full their own responsibilities, and, second, to urging upon the public in every possible way the necessity of co-operating in these efforts to reduce accidents. In addition, especially in the last few years, other semi-public bodies and groups of citizens, in conference, meetings and through the press, are urging upon the general public its responsibility. We also have the activities of the automobile associations. Possibly the greatest difficulty in the situation as it exists today is the diversity of these efforts. While all of these activities are pointed in one way or another to the same end, the methods are entirely different and result frequently in confusion. A great step forward could be taken if, through the co-operation of these numerous activities, standardization of methods and practices could be obtained. As an indication of the lack of standardization, a recapitulation of the laws in the various states covering the various types of warning signs shows that seven states provide that there should be a warning sign with the words "Railroad Crossing"; two states, "State Law. Stop"; one state, "R. R. Crossing"; three states "Railroad Crossing—Look out for the Cars; While the Bell Rings or the Whistle Sounds"; one state "Railroad Crossing—Look out for the Locomotive"; one state "Railroad Crossing—Stop Look and Listen"; four states "Look Out for the Cars"; one state "Look out for the Locomotive"; one state "Look out for the Cars When You Hear the Whistle or Bell"; one state "Main Line—Danger—Stop"; and one state "Danger," while six states provide that there shall be a sign of some sort with large or distinct letters or with red letters. In 16 states the law provides for state commissions which shall have the authority to prescribe the character of warning signs, while in 5 states there is no law or commission authority. In an effort to provide for a warning indication 300 ft. or more in advance of the crossing, laws have been passed in five states, the laws being very nearly uniform. Activities of this kind show what can be done with the intelligent co-operation of the railroads, the public utility commissions, and legislative committees.

The railroad crossing is identified by the location of one or more of the various standard crossing signs, located on the right-of-way. In many states the standard approach warning sign, a white metal disc, 24 in. in diameter, is also located at least 300 ft. from the railroad as a further indication to the man on the highway that he is approaching a railroad crossing. Protection is further afforded by the employment of flagmen, equipped with the appropriate discs during the day and lights of appropriate color at night, to indicate to the travelers on the highway when it is not safe to cross the tracks, or to flag trains when it is necessary for them to stop. Crossings gates, manually operated, are used at many points which completely barricade the highway and sidewalks during the time trains are approaching and passing. It is standard practice to paint the crossing gates with alternate stripes of black and white, 12 in. in width, to increase the visibility of the obstruction to the traveler approaching on the highway. At night these gates are lighted by a red light suspended from the gate, and displayed only to the highway. There are on record a number of instances where these gates have been run through at night by approaching automobiles passing to the left of the red light, apparently assuming that the red light was on the rear of an automobile ahead. In addition there are any number of instances where crossings gates have been run through during daylight hours.

In addition, in certain localities, where there is a restricted view or bad weather conditions prevail, etc., flagmen and gatemen are informed by the use of electric circuits of the approach of a train. Additional protection is afforded by means of; (1) an electric bell, operated by the approach of trains; (2) so-called wig-wag signals, consisting of a metal disc by day and a red light at night, fixed at right angles to the highway and indicating the approach of a train by a swinging motion; and (3) a so-called flashing signal, consisting of two red lights, horizontally arranged and so spaced that the alternate flashings of the lights present toward the highway when indicating the approach of a train, the appearance of a horizontally-swinging red light.

Recommendations of the Committee

It was the thought of the committee that the first thing to be done is to secure the universal adoption of a standard railroad crossing sign, so that the shape and wording will be exactly the same in all of the states and in Canada. Of the numerous shapes now in use, rectangular, triangular, round or in the form of a cross, the cross seems to be best fitted to fill the specification. It is inherently appropriate and it is rarely ever used in advertising. At present it is acceptable to the public service commissions of several states including New Jersey, New York and Indiana. Inasmuch as interstate automobile trips now are very common there is no good reason why the form of the crossing sign should change at state lines. It is probable that the size of the signs will have to be a compromise, but the chief requisite is that they be large enough to be plainly visible for 300 ft. After getting the universal railroad crossing sign adopted the use of the present approach sign should be extended and it should be put up at all grade crossings. These approach signs should be set at least 300 ft. from the crossing. As the railroads have no right to erect signs in public highways, say 300 ft. from their tracks, all such signs should be erected and maintained by public authorities just as any other sign is maintained along the important highways today, such as those notifying the autoist that there is a "Sharp Curve to the Right," etc. After getting the standard approach sign and the standard crossing sign adopted the next important point is that at certain of the more important crossings where both highway traffic and train traffic is heavy, both the crossing sign and the approach sign should be illuminated. Where illumination is necessary, it can best be provided, as far as the crossing sign is concerned, by erecting the intermittent flashing light signal which is so well hooded that it affords a striking signal by day as well as night. Some railroad authorities consider the flashing light superior to watchman and crossing gates except at crossings which are within switching limits or in the larger cities and boroughs.

History verifies the unreliability of the human element as shown by various accidents occurring through failure of the individual to act at all or to act for the protection of the conditions involved. It is, therefore, the opinion of the committee that the most reliable method, which must be considered the better method, of protecting grade crossings is by a mechanical device actuated by approaching trains to warn highway travelers of the danger created by their proximity.

A railroad track involves no danger at grade crossings except when trains are approaching and it is, therefore, necessary that any device intended to afford effective protection must show the approach of trains and therefore, be actuated either directly or indirectly thereby. At the present time, this is most completely represented by the flashing light signal, consisting of two red lights in a horizontal position, flashing alternately and presenting the appearance, to the highway, of a horizontally swinging red light, equally visible day or night. It has been contended that limited railroad traffic lessens the danger and in such sections the highway traveler is prone to assume, due to the infrequent passing of trains, that the danger created by their approach is remote enough to be ignored and they, therefore, frequently disregard the crossing with the usual disastrous results. With the twenty-four hour mechanical signal, which never sleeps on duty, whether the trains be frequent or few, the approach is always heralded and ample warning provided. A signal without motion is liable to be unseen and, with the increased number of closed cars the audible signal, unheard, particularly in cold weather. It is, therefore, concluded that the effective protection is the signal on duty twenty-four hours per day, and of such conspicuous features that the highway traveler cannot fail to see and know its meaning, the responsibility for heeding it thereafter devolving solely on him.

It is suggested that when four-gate crossings are used, consideration should be given to operating the gates so that the entrance gates are lowered before the exit gates and the exit gates raised before the entrance gates and further that at all such crossings the highway should be divided by a standard white traffic line, in order to avoid the possibility of trapping vehicles on crossings. It is also suggested that all advertising signs which conflict with or detract from the importance of the standard approach or crossing sign should be eliminated.

Conclusions of the Committee

1. That the present standard approach sign should be extended to all grade crossings in the United States and Canada.

2. That the crossing sign be uniform over the entire country and that the cross sign reading "Railroad Crossing" seems to be best fitted for this purpose.

3. That on the more important crossings, intermittent horizontal flash light signals which meet the requirements laid down by the Signal Section of the American Railway Association should be erected in addition to illuminating the approach signs.

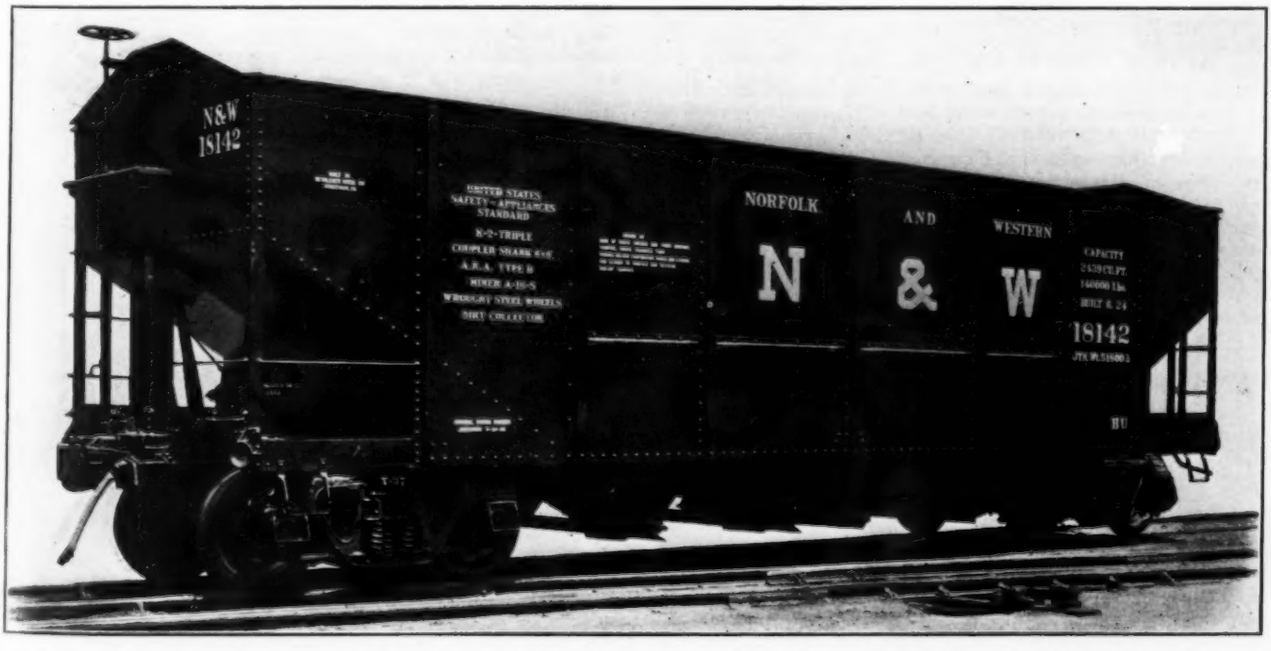
4. That all operators of automobiles be examined on color, sight and hearing and on the meaning of the crossing signs and signals, and that all grade crossing accidents and violations be reported to the proper state auhtorities and if the operator of the vehicle is at fault his license be suspended for a definite period and he be fined. Also, all damages to crossing gates resulting from automobiles running through them should be collected from the automobile owners, if possible.

5. That where practicable, the approach sign as well as the crossing sign should be erected in the middle of the highway or street and in addition a traffic stripe should be painted on the road or street.

6. That careful attention be given at all times to improving the line of sight in both directions at highway crossings, as well as keeping the crossings in good physical condition.

7. That the use of red tail lights on automobiles should be discontinued and another color be substituted. The red light is considered a stop signal on the railroads of this country and there is no doubt that the safety upon the highways and at grade crossings, as well as upon the railroads themselves, has been weakened by its indiscriminate use.

The personnel of the committee was as follows: J. E. Zullinger, supervisor, Pennsylvania, West Philadelphia, Pa., chairman; F. J. Meyer, assistant engineer, N. Y., O. & W., Middletown, N. Y.; F. C. Kronauer, assistant division engineer, Erie, Jersey City, N. J.; P. W. Savage, assistant engineer, N. Y., N. H. & H., New Haven, Conn.; John Sheehan, supervisor, L. H., Jersey City, N. J.; C. J. Coon, assistant engineer, N. Y. C., New York; G. D. Williams, supervisor, Atlantic City R. R., Camden, N. J.; W. L. Buck, assistant supervisor, signaling, Long Island, Jamaica, N. Y.; W. A. Clark, supervisor, Reading, Trenton Junction, N. J.; W. O. Dennis, supervisor, L. & N. E., Pen Argyl, Pa.; M. A. H. Scull, supervisor, C. R. R. of N. J., Ashley, Pa.; George W. Morrow, supervisor, N. Y., N. H. & H., New Haven, Conn., and R. H. Orwig, supervisor, Pennsylvania, Parkton, Md.



All-Steel 70-Ton Capacity Coal Car with Four Hoppers. Built for the Norfolk & Western by the Bethlehem Steel Company

General News Department

The Interstate Commerce Commission has denied the petition of the Chicago, St. Paul, Minneapolis & Omaha for exemption from the train control orders of June 13, 1922, and January 14, 1924.

The Railroad Commission of South Carolina has authorized the discontinuance of eight local passenger trains on certain sections of the Seaboard Air Line and of the Southern Railway. One application of the Seaboard Air Line was granted with a proviso that other trains be put on. An application of the Southern Railway for leave to discontinue certain trains between Columbia and Camden was suspended until January 1.

Hearings October Eighth on Request of B. R. & S. C., F. H., E. & S. E.

The Railroad Labor Board has called hearings to be held on October 8 on the dispute between the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees and a number of roads throughout the country, reported in the *Railway Age* of September 6. The brotherhood is asking for increases ranging from 4 to 16 cents an hour. In a campaign for wage advances last spring a few lines agreed to increases of two to five cents an hour. The roads involved in the present dispute are those which failed to reach agreements with the brotherhood in the spring.

Stop-Look-Listen Clubs

Missouri Pacific employees a little over a month ago started "Stop-Look-Listen clubs" and have organized 106 clubs with a total membership of nearly 25,000 automobile owners and drivers. The Southern Kansas division club has succeeded in securing the support of nearly all the big oil companies which have required their drivers to sign the pledge and display the sign, "This Car Stops for All Railroad Crossings." At Falls City, Nebr., the Commercial Club is co-operating with the Omaha division club in soliciting members. At Poplar Bluff, Mo., more than 3,200 automobiles now bear these signs.

Railway General Foremen Elect Officers

At the eighteenth annual convention of the International Railway General Foremen's Association held in Chicago, September 9 to 12, the following officers were elected: President, H. E. Warner, shop superintendent, New York Central, Elkhart, Ind.; first vice-president, Charles A. Barnes, general foreman, Belt Railway of Chicago; second vice-president, F. M. A'Hearn, general foreman, Bessemer & Lake Erie, Greenville, Pa.; third vice-president, W. F. Lauer, general foreman, locomotive department, Illinois Central, Memphis, Tenn.; M. R. Benson, general foreman, Michigan Central, St. Thomas, Ont., was elected chairman of the executive committee.

Northern Pacific Main Line Completely Block Signaled

The last link in the chain of automatic block signals on the Northern Pacific between the head of the Great Lakes and the Pacific Coast was placed in service on September 15. Completion of this last gap, 27 miles, between Little Falls, Minn., and Staples, was the occasion of a celebration by the citizens of Little Falls and officers of the Northern Pacific. Preparations for the celebration of the event were handled by a committee of local citizens under the direction of Mayor N. N. Bergheim and L. V. Tanner, president of the Little Falls chamber of commerce. The installation of the final signal blade was made by C. L. Nichols, general manager of the Northern Pacific. Automatic block signals on this road were first installed in 1902 between St. Paul and Minneapolis and a total of 2,240 miles of main and branch line, including stretches of double track, have since been equipped.

The main line block signal program was completed within a few days of the forty-first anniversary of the driving of the gold spike at Gold Creek, Mont., which linked the west and the east over the line of the Northern Pacific.

Group Life Insurance Increased

The clerks, signalmen and towermen of the Lehigh Valley who, by co-operation with the railroad company and the Travelers' Insurance Company, have had the benefit of group life insurance during the past two years, have made application, and the request has been granted, to have the policies doubled; that is to say, those who have been insured for $1,000 each are now insured for $2,000. The insurance now in force for the benefit of these three classes amounts in the aggregate to over $3,000,000. The total amount of life insurance now in force under the group plan, for the benefit of employees of the Lehigh Valley, is $35,000,000.

Hearings on the Crow's Nest Rates

This week will witness the opening before the Dominion Board of Railway Commissioners in Ottawa of the hearing of complaints of shippers throughout the country against the discrimination in rates caused by the full restoration on July 7 last of the Crow's Nest Pass Agreement. The case will probably run through two or three weeks. Representations from all the important commercial organizations and interests in Canada will be made to the board.

A general reply to the charge of discrimination resulting from the Crow's Nest rates schedule has been filed with the Dominion Railway Board by the Canadian Pacific Railway. The reply simply states that the tariffs now in operation are strictly in conformity with the Agreement. The submission of the C. P. R. is that the lower rates apply only to lines of that road in existence when the Agreement was effected in 1897. At competing points these rates are met by the Canadian National Railways.

The shippers' side of the case is based on the claim that all rates should come down to the Crow's Nest level and that, failing to do this, there will be no undue discrimination in contravention of the Railway Act of Canada. The basic case is the complaint from Brantford, Ont., of discriminating in favor of Hamilton, Ont., a city a short distance away. Essentially, the case is a legal one.

Valuation Case in Court

Arguments were heard by the Supreme Court of the District of Columbia at Washington on September 16 on the petition filed by the Kansas City Southern for a writ of mandamus to compel the Interstate Commerce Commission to make its valuation of the property of that road comply with what the counsel for the company, Samuel W. and Frank H. Moore, contend to be the proper interpretation of the valuation act. They asserted that the valuation required by law means the true economic or exchange value, the value which is protected from confiscation by the Constitution and the fifth amendment thereof, and that the commission has disregarded the command of the statute because otherwise it would have found that the value as of June 30, 1914, of all the common carrier property used or owned by the carrier was not less than $80,000,000. P. J. Farrell, chief counsel of the commission, took the position that the errors of law alleged as having been made by the commission were not in fact errors and that if they were errors, they could not be corrected by mandamus proceedings. Such a challenge, if made, he said, should be made in a suit in a district court because such courts have

exclusive jurisdiction over all orders of the commission except orders for the payment of money. Counsel for the railroad also contended that the commission is required to report more fully than it did an analysis of methods employed by it; that it should report separately from value for rate-making purposes, other values and elements of value; that it should report the original cost; and that the final value to be found is to be used as prima facie evidence of the value of the property in all proceedings under the Interstate Commerce Act, not merely for rate-making purposes.

Great Northern to Electrify 80 Miles

The Great Northern will soon begin to prepare for electric propulsion on an 80-mile section of its line over the summit of the Cascade mountains according to an announcement by L. C. Gilman, vice-president, at Seattle, Wash. The line between Wenatchee, Wash., and Skykomish will be the first to be electrified. Power will be furnished by the company's power plant, to be installed on the Chelan river. The site has already been purchased and plans have been made to construct a generating station capable of supplying power for the entire electrified line.

Plans for the electrification of the line between Spokane and Seattle were made before the war but construction at that time was postponed because of the high cost of labor and materials. With the return of more normal conditions, the work is to be pushed to completion.

For Damage to a Train by a Truck, $108.10

The Chicago, St. Paul, Minneapolis & Omaha is one of those railroads which educate automobile owners by calling upon them, now and then, to settle for damage to railroad property; and a recent incident of the kind is "told in pictures" (in part). A reproduction of the picture is given below.

It appears that this was not one of the more common class of crossing accidents, those due to ignorance or gross recklessness. The car was a large freight truck, and the men in charge of it saw the railroad train when they were a considerable distance away from the crossing; but they were on a descending grade and their brakes were defective; and they struck the thirtieth car in a long freight train.

This accident occurred at Minneopa, Minn., near Mankato, the headquarters of the contractors who owned the truck. One freight car in the train was derailed and was damaged to the extent of $80.85. The delay to this train and to a passenger train caused an additional expense of $27.25. The total of these sums, $108.10, was set forth in a claim which was presented by the railroad company to Lundin Brothers, owners of the auto-truck; and on September 6 (five months after the mishap) the insurance company which had guaranteed the truck owner against losses of this kind, paid the claim without protest.

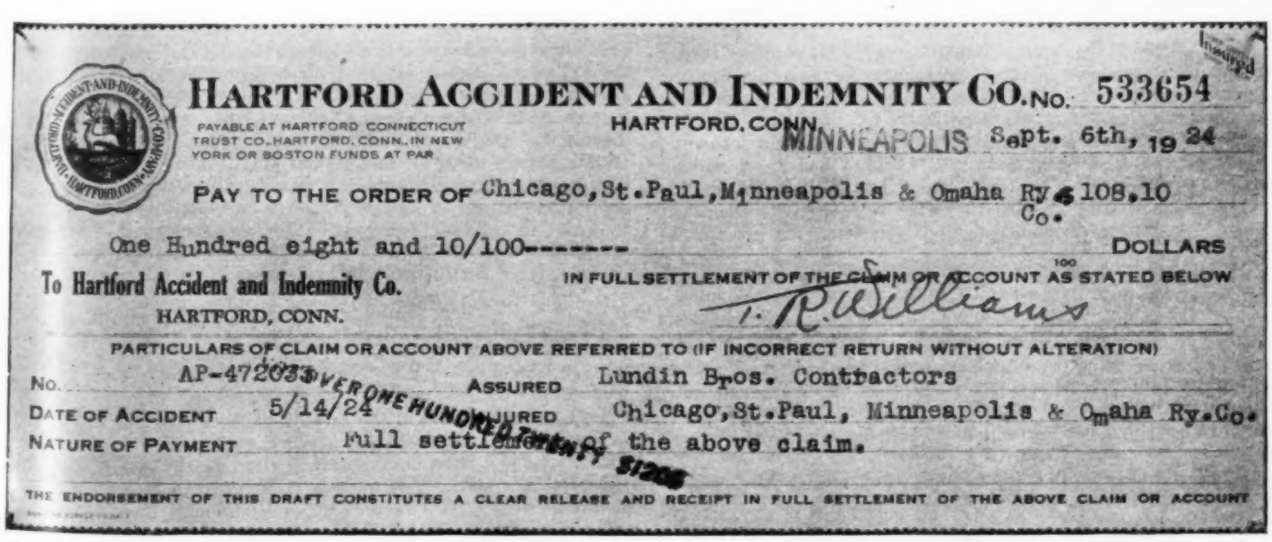
I: C. C. Statistics for 1923

There were 807,524 stockholders of Class I railroads, not including switching and terminal companies, at the end of 1923, according to the Interstate Commerce Commission's preliminary abstract of statistics of common carriers for that year just issued. This was an increase of 30,392 as compared with the number reported for 1922, the increase in the Eastern district being only 22, that in the Southern district 6,587, and that in the Western district 23,773. The total investments, as shown by the balance sheet, amounted to $22,352,530,077, as compared with $21,445,292,679 the year before. Expenditures for new lines and extensions amounted to $7,641,026, as compared with $48,551,339 the year before, while expenditures for additions and betterments amounted to $962,660,112 as compared with $418,870,780 the year before. Credits for property retired amounted to $242,094,543 and adjustments to $2,110,060, making the net charges to investment in road and equipment during the year $730,316,655, as compared with $302,106,786 the year before. Stocks actually issued during the year amounted to $280,525,341 and funded debt to $811,349,833. Dividends declared during the year amounted to $346,544,448. The par value of stock on which dividends was paid was $4,607,897,472 and the average rate on dividend-yielding stock was 7.52 per cent.

International Report on Car Coupling Accidents

Automatic car couplings and the safety of railway workers, is the title of a pamphlet which has been issued by the International Labor Office (Geneva, Switzerland), embodying a study of the statistics of fatal and non-fatal injuries to railway employees in coupling cars, through a series of years, in the United States, Canada, Great Britain and nine other countries. This study was made pursuant to a resolution which was adopted at the International Labor conference last October with a view to seeing whether an international agreement in the matter would be desirable.

The introduction of automatic couplers on freight cars in the United States thirty years ago reduced the total annual injuries to employees from 70 to 90 per cent. This is past history. The report goes on to compare present conditions in different countries, and finds that the risk to employees in Great Britain and Ireland is very much lower than in the United States, judged by the governmental reports of casualties; but in most of the countries of continental Europe, as expressed by the corresponding percentages, the risk is higher than either in the United Kingdom or in the United States. Comparisons have been made with casualties to miners and men in other hazardous industries and the conclusion is reached that the occupational risk of men performing coupling and uncoupling operations is exceedingly high. An estimate of this risk, which seems to include all of the countries in which studies were made, gives the average as from 1½ to 2½ killed and from 50 to 60 injured, annually, per thousand



HARTFORD ACCIDENT AND INDEMNITY CO. NO. 533654

PAYABLE AT HARTFORD CONNECTICUT TRUST CO., HARTFORD, CONN., IN NEW YORK OR BOSTON FUNDS AT PAR.

HARTFORD, CONN. MINNEAPOLIS Sept. 6th, 1924

PAY TO THE ORDER OF Chicago, St. Paul, Minneapolis & Omaha Ry Co. $108.10

One Hundred eight and 10/100------- DOLLARS

To Hartford Accident and Indemnity Co.
HARTFORD, CONN.

IN FULL SETTLEMENT OF THE CLAIM OR ACCOUNT AS STATED BELOW

T. R. Williams

PARTICULARS OF CLAIM OR ACCOUNT ABOVE REFERRED TO (IF INCORRECT RETURN WITHOUT ALTERATION)

No. AP-472033 ASSURED Lundin Bros. Contractors

DATE OF ACCIDENT 5/14/24 INJURED Chicago, St. Paul, Minneapolis & Omaha Ry. Co.

NATURE OF PAYMENT Full settlement of the above claim.

THE ENDORSEMENT OF THIS DRAFT CONSTITUTES A CLEAR RELEASE AND RECEIPT IN FULL SETTLEMENT OF THE ABOVE CLAIM OR ACCOUNT

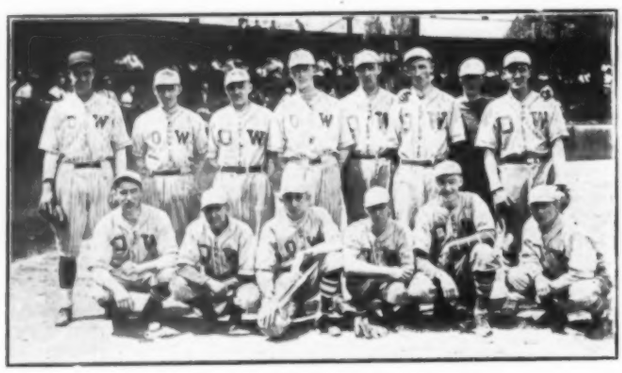
An Interesting Exhibit in a Highway Crossing Accident

shunting operators. This last term evidently is meant to include all employees exposed to risk in car coupling.

The report omits to mention the obvious fact that, so far as risk of bodily injury is concerned, the automatic couplers used in America and the non-automatic chain couplings in use in Europe are alike; in that, with neither kind of couplings, are the switchmen or shunters required to go between the cars except when both of the cars to be coupled (or uncoupled), are motionless. The deplorable records of coupling accidents in the United States prior to the adoption of the Janney coupler were due to the use of the link and pin coupler, with which men risked injury to their bodies by walking along between the ends of moving cars, and injury to their fingers by manipulating the links of cars in motion.

U. P. System Baseball Championship

Baseball teams representing the general office forces of the Union Pacific, the Los Angeles & Salt Lake, the Oregon-Washington Railroad & Navigation and the Oregon Short Line, all parts of the Union Pacific System, met in Salt Lake City recently in an elimination contest to decide the system championship. The contest lasted for two days. On the first day the L. A. & S. L. team played the O. W. R. R. & N. and the U. P. played the O. S. L. The winners of these games, the U. P. and the O. W. R. R. & N., played on the second day and the O. W. R. R. & N. team was victorious, thereby winning the system championship.



The Winning Team

Bulletin Boards, Good and Bad

The Metropolitan Life Insurance Company, New York City, having observed bulletin boards in hundreds of shops and offices, has issued a booklet containing numerous useful bits of information concerning the management of this essential business instrument. The following is quoted from the booklet:

"Take a look at the bulletin board in your shop or office. Read the announcement about Easter services in the churches and the other one about Miss Bresnahan getting married. A bulletin board in many places is the mausoleum for dead facts. If the Easter announcement was for Easter this year and not last year, then your board is kept up to date better than most bulletin boards. Probably Miss Bresnahan, now Mrs. Dillon, has already brought the new baby in to show to her old friends at the office. . . . A study of bulletin board methods brings out the following high spots.

"Care of the bulletin board should be the definite duty of some one person.

"As soon as its object is attained, anything posted should be removed. Out-of-date notices hurt the value of the bulletin board.

"It is not necessary to post a new notice immediately to replace one taken down. An interval of blank space emphasizes the next bulletin.

"To impel frequent inspection a bulletin board must carry news.

"Whenever possible first intimation of any change in conditions or routine affecting the employees should appear on the bulletin board.

"News value can be enhanced by posting employees' Lost and Found ads, and notices concerning employees' social functions."

Traffic News

The Temiskaming & Northern Ontario is to place electric storage battery cars on its Kirkland Lake branch.

A train of 50 gondola cars loaded with cast iron pipe totaling 1,185 tons was moved recently by the Southern Railway from Bessemer, Ala., to Jacksonville, Fla., 517 miles, in 36 hours. The pipe, made by the Central Foundry, Bessemer, was for export to Porto Rico.

The Chicago & Alton has re-equipped its Alton Limited running between Chicago and St. Louis, Mo., and has cut its schedule to 6½ hours. Beginning on September 28 the train leaves Chicago at 11:30 a. m., arriving at St. Louis at 6 p. m., stopping only at Bloomington and Springfield. This schedule will reduce the running time between Chicago and St. Louis 1 hr. and 15 min. The new service consists of two new trains of all-steel 84 ft. cars. The first part of the observation car has a writing desk, library and magazine stand devoted to the exclusive use of women patrons. Adjoining this are tea rooms attended by Japanese maids and a women's lounge and smoking room.

During the calendar year 1923 the number of passengers transported by auto stage lines in California totaled 29,202,073 or an increase of approximately 8,000,000 over 1922, according to the report of the Auto-stage and Truck department of the Railroad Commission. A total of 833,245 tons of freight was transported in the same way. The operating revenue of all the auto carriers amounted to $17,554,980 and the operating expenses $16,237,160. The smaller companies have $1,925,144 invested in plant and equipment and the larger companies $11,632,831. This amount includes 1,665 passenger vehicles and 1,273 used for freight, as well as 355 other pieces of equipment, such as trailers.

Grapes from California now arriving in New York are delivered to consignees at seven different stations, this distribution having been found necessary because of the very heavy movement. The principal fruit terminal in New York is that of the Erie Railroad, where there are facilities for selling the fruit by auction; but because of the large quantities arriving at this season—sometimes three or four hundred cars a day—an arrangement was made, by consent of the shippers and consignees, through the Car Service Division of the American Railway Association, by which some of the grapes are diverted, at Chicago. When the movement is too heavy to be accommodated by the terminal facilities of the Erie, the Car Service Division, at Chicago, arranges to send a part of the grapes thence over the Pennsylvania or the Baltimore & Ohio.

Complete Pullman Service on Great Northern

Arrangements have been made between the Great Northern and the Pullman Company whereby the latter company will take over all sleeping car service on the Great Northern by March 1. On September 15 Pullman service was extended to runs between the Twin Cities and Grank Forks, N. Dak., between Grand Forks and Duluth, Minn., between the Twin Cities and Aberdeen, S. Dak., between Aberdeen and Fargo, N. Dak., and between Havre, Mont., and Great Falls.

Simplified Warehouse Forms

Banking organizations, trade associations, manufacturing and distributing group as well as railroad and transportation bodies are being invited by the Division of Simplified Practice, Department of Commerce to a conference on September 24, in the Department of Commerce, with the public warehouse industry, to consider the simplification of the present endless variety of forms used in warehousing and to act on uniform documents for the warehouse industry, which have been prepared after nearly two years study by a special committee of the American Warehousemen's Association headed by A. H. Greeley of Cleveland, Ohio. Ray M. Hudson, chief of the Division of Simplified Practice, has sent out hundreds of invitations. Present diversity in such forms is a cause of confusion, lost time and errors.

Heavy Grain Loading

A new record in the number of cars loaded with grain and grain products was established during the week ended August 30, when 68,837 cars were loaded with those commodities. This was not only an increase of 7,224 cars as compared with the preceding week, but an increase of 4,122 cars over the previous weekly record which was established during the week of July 19, 1921, when 64,715 cars were loaded. The bulk of this grain movement was in the western districts, where 49,128 cars were loaded during the week of August 30 this year, as compared with 37,136 cars during the corresponding week last year or an increase of 11,992 cars. Reports received by the Car Service Division of the American Railway Association showed that on August 31 the eight principal granger roads had 29,273 grain cars in storage in readiness to take grain; also more than 900 serviceable locomotives in storage. These roads had on their rails slightly more than 100 per cent of the total number of box cars which they own. Since early in May, this year, more than 800 empty western-owned box cars have been sent home daily by eastern lines through Chicago and St. Louis.

Freight Traffic in July

Freight traffic on the Class I railroads of the country in July this year was nearly 14 per cent below that for the corresponding period in 1923, according to compilations by the Bureau of Railway Economics. The total was 33,157,384,000 net ton miles, or 5,358,774,000 net ton miles below the total on July, 1923. In the Eastern district there was a decrease of 19.9 per cent and in the Southern district 9.4 per cent. In the Western district there was a decrease of 6.1 per cent.

For the first seven months of 1924, the total was 237,791,281,000 net ton miles, a decrease of 9.9 per cent as compared with the corresponding period in 1923. In the Eastern district there was a decrease of 13.3, in the Southern 7.8 per cent and in the Western 5.5 per cent.

The reports showed a daily average movement per freight car in July of 25.6 miles, an increase of two-fifths of a mile above the average for June this year but a decrease of 2.2 miles below the average for July, 1923.

The average load per freight car in July was 26.7 tons, the same as that of June this year but a decrease of 1.8 tons under July last year.

Atlantic States Shippers' Conference

The Middle Atlantic States Shippers' Advisory Board met in New York City on September 11, with an attendance of about 500. The prominent railroads generally reported conditions in excellent shape. Shippers and receivers were reminded that there is continuing neglect of the duty to have coal shipped before the autumn rush. W. J. L. Banham, general chairman of the board, reported that for the 34 weeks of 1924 up to August 23, the number of carloads of freight recorded was only 4.8 per cent less than for the same period in 1923; and this decrease is largely accounted for by the slack movement of coal.

The special committee on store-door delivery presented a report, laying down the principles on which it will be necessary to proceed in order to accomplish anything in this matter. The service must be optional, the charges must be reasonable and the system should be established gradually. To induce shippers and consignees to patronize a general delivery service it will be necessary to convince them of the prospective saving.

The Baltimore & Ohio reported that, beginning with October 1, arrangements would be made for the delivery of freight in the Bronx (New York City), at the terminal of the Central of New Jersey. Major Elihu Church, transportation engineer of the Port of the New York Authority, explained the plan of the Port Authority for establishing sub-freight terminals in each of the eight zones on Manhattan Island. Major Church estimates that each motor truck sent to a pier in Manhattan, takes 68 minutes to unload.

The meeting was addressed by Hon. W. D. B. Ainey, chairman of the Pennsylvania Public Service Commission, and W. W. Atterbury, vice-president of the Pennsylvania Railroad. General Atterbury expressed marked satisfaction with the operation of the Advisory Boards and predicted increasingly satisfactory relations between the railroads and the shippers.

Commission and Court News

Interstate Commerce Commission

Lake and Rail Rates Modified

The Interstate Commerce Commission has issued a decision finding justified, with some exceptions, the proposed withdrawal of the Delaware, Lackawanna & Western, the Erie and the Lehigh Valley from participation in through joint lake-and-rail and rail-lake-and-rail freight rates to points on certain of their eastern connections, but as to certain of the rates proposed to be withdrawn the commission held that the continuance of the routes is necessary. The chief arguments advanced in support of the tariffs, which were suspended on protests filed by milling interests at Minneapolis, Minn., Kansas City, Mo., and Waverly, N. Y., were that the cost of handling at the docks reduces the revenue from this traffic to a dangerously low figure, and that the remaining routes were ample to handle the traffic without injuriously affecting the public.

State Commissions

The Missouri Public Service Commission issued an order on September 15 suspending 31 freight tariffs filed by railroads operating in the territory south of the Missouri river. These roads proposed to increase rates on October 1. The commission will commence an investigation to determine the reasonableness of the rates suspended.

Automatic Signal Not Sufficient Protection

The Public Service Commission of New York has reaffirmed its order directing the Erie Railroad and the receiver for the Pittsburg, Shawmut & Northern to maintain a flagman at the Church street crossings of the two railroads in the village of Canaseraga, Alleghany county. The order provides that one flagman may serve the crossings of both railroads if the two companies so elect. The crossings are only a short distance apart. The flagman is required by the order to be on duty from 7:30 a. m. to 7:30 p. m.

At a rehearing held on July 15 it was brought out that the Erie had already made expenditures for the installation of an automatic signal which it was claimed would afford satisfactory protection. The Pittsburg, Shawmut & Northern was willing to join in the maintenance of the "automatic flagman."

On behalf of the village it was argued that the human flagman be retained. The commission, holding that an automatic flagman is not proper for this location, says:

"It would be confusing in many instances since trains would cause the 'flagman' to operate while they were stopped at the station, doing switching, or taking water, all of which would in fact be premature warnings, and would lead to neglect on the part of those for whom warning was intended."

Court News

Jurisdiction of New York P. S. C. in Elimination of Grade Crossing

The New York Appellate Division holds that the Public Service Commission, under section 91 of the Railroad Law, has full jurisdiction to hear and determine whether or not a grade crossing shall be eliminated, what changes shall be made in the railroad line, and what highways or parts of new highways must be constructed in order that the elimination of the grade crossing may be consummated. Its determination can be reviewed by appeal only. But power to acquire the necessary real property is not given to the commission. Under section 92, if the municipal corporation having jurisdiction over the road could not purchase the land it could acquire same by condemnation proceedings, to which the railroad has a right to notice and hearing.—Town of Nichols v. Park (New York, Lackawanna & Western intervening), 204 N. Y. Supp. 584.

Labor News

Labor Board Intervenes in P. R. R. Case

The Labor Board has intervened in a controversy between the Pennsylvania and its telegraphers who are members of the Order of Railroad Telegraphers and has designated September 22 as the date on which it will hear the case. Upon receiving advice that a committee of the Pennsylvania telegraphers had voted unanimously to take a strike vote, a meeting of the board was immediately called and it was decided to intervene in the dispute as provided in the Transportation Act.

The controversy which led to a decision in favor of a strike vote arose as a result of the refusal of the Pennsylvania to negotiate with representatives of the Order of Railroad Telegraphers on the renewal of a disputed agreement between the telegraphers and the road. The Pennsylvania, in line with its policy of dealing with its employees directly, has consistently refused to recognize the officials of the Order of Railroad Telegraphers as representatives of its telegraphers. These officials also hold positions of like authority in the "company union" on the Pennsylvania and the management is willing to meet them as such.

Robertson and McGuire Refuse to Appear Before Labor Board

The long awaited test of the powers of the Labor Board under the Transportation Act and of the constitutionality of the Act itself will soon be made in the United States District Court at Chicago. The legal basis for such a test was established on September 11 when Donald Richberg, counsel for the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, appeared before the Labor Board and announced the definite refusal of D. B. Robertson and John McGuire, executives of the two organizations, to appear in response to subpoenas to testify as witnesses before the board in the wage and rules revision controversy with the western lines.

Mr. Richberg says that the purpose of the Labor Board in issuing subpoenas for these men is to provide the basis for test cases to determine whether witnesses within or without the territorial jurisdiction of the United States District Court can be compelled to appear before the board in such a proceeding as the present. "Representatives of the locomotive engineers and firemen," he continued, "maintain that the Labor Board has no power to do that which no court can do—that is, to compel persons not only to submit determination of their rights to a prejudiced and biased tribunal but also to compel them to participate in a litigation, although they prefer to default rather than to waste time and money in presenting their case to a tribunal which has freely exhibited its preference in favor of their opponents."

Enginemen's Brotherhood Mines Have Trouble With Union Employees

The Coal River Collieries Company, which operates coal mines in West Virginia and Kentucky and is owned by members of the Brotherhood of Locomotive Engineers, has refused to sign a wage agreement with the United Mine Workers of America because it cannot earn its expenses while operating under the union scale of wages, according to Warren S. Stone, chairman of the brotherhood and of the board of directors of the coal company. The brotherhood members closed down their mine rather than pay the wages demanded by the union. This action brought a strong letter of protest to Mr. Stone from John L. Lewis, president of the Mine Workers' Union, declaring that the brotherhood's company has assumed the same attitude as other operators in the field.

"This is an intolerable position for a coal company whose stock is largely owned and whose affairs are directed by union men, to occupy," Mr. Lewis said.

In reply Mr. Stone declared that "the members of the Brotherhood of Locomotive Engineers who have invested over $3,000,000 in these properties are entitled to some return on their investment and I think you will concede this; yet at the present price at which coal is selling and the cost of mining under the Jacksonville agreement it is impossible for the union mines to break even."

Foreign Railway News

Larger Coal Cars Coming Into Use in Britain

The cars in use by the British railways have always been very diminutive from an American standpoint and now that the 120-ton coal car is coming into use on this continent, so at least one British road is adopting larger cars for its coal traffic. The road is the Great Western and the new cars which it has placed in service are of 20 long tons' capacity, replacing cars of 8, 10 and 12 long tons. Apparently the chief obstacle in the way of adopting larger cars in England, aside from the severe limitations of clearance, is the habit and equipment of the shippers. Shippers equipped to handle 12-ton cars may find changes in methods and perhaps additional capital expenditures necessary in order to utilize the larger cars. Therefore, in order to offer some inducement to shippers, the railway is offering a 5 per cent rebate to all shippers using the larger cars loaded to capacity.

Germany Criticizes Dawes Plan

Further information and criticism regarding the effect of the Dawes system of control of the German railways has just been made public. The railway commissioner, who as previously advised is to be appointed by the foreign members of the board, is regarded as a kind of "sanction"—a sword of Damocles.

That the Germans will sooner or later default is taken as a foregone conclusion in Germany. The Borsen Zeitung even says: "The world knows that the whole German people entertains the greatest skepticism of the Dawes plan being capable of practical execution, and this dubiety is confirmed by the opinions of our own best experts." It is, therefore, clear that the powers to be wielded by the railway commissioner will be of a very responsible and determinative nature.

France is entitled to receive 52 per cent of the railway bonds and it has hitherto been assumed that when the government receives them her financial position will prompt her to sell them in the open market at any price they will fetch. As against this proposition Germany raises the question whether such action is a certainty, and insinuates that there is something more that France requires than money. Then follows a suggestion that with 52 per cent of the bonds in her possession, France would have every right to ask that the railway commissioner be a Frenchman. Without any hitch occurring in the working of the scheme, as far as it affects the railways, it is obvious that they would automatically pass into control of the French commissioner. He would have power to raise rates for the ostensible purpose of obtaining more profits, so that the amount that Germany would be in default might be paid. But, as everyone knows, the raising of the railway freights in itself will not increase the revenue of the railways. If freights were fixed too high German goods would soon become far too dear to compete in the world's markets, and there would naturally be considerably less transported. Under such conditions Germany would still be in arrears and the commissioner would be permanently in charge. Again, should the commissioner continue such a policy for any length of time—and there is no direct means of stopping him before the damage is done—he will hold the fate of all German industry in his hands.

For one thing, stagnation in trade would at once lead to slumps on the stock exchange. People would be compelled to realize on their investments, as is always the case in a crisis. Just as now, good German shares would be going for a song. (As a matter of fact, German shares are at present booming. It is, of course, only one more German method of attempting evasion). By that time, however, the French government which, of course, would be the real nominator of the commissioner, would have considerable funds at its disposal at the Reparations Bank in Berlin, into which, according to the Dawes scheme, all reparations in marks are in the first instance to be paid.

What is to be done with the bulk of the money has up to the present remained an unsolved problem. How it is to be transferred across the German border without leading to an annihilation of the German currency, or taking the form of shipment of vast shipments of goods, no one has yet been able to say. But if, by that time, a large sum has accumulated, and German shares, owing

to the slump, are on offer below their real economic value, it is extremely probable that, indirectly, great packets of shares would pass from German into French ownership. The wholesale and continuous purchase of shares in good industrial concerns made on French account in the last two years is ground enough for thinking that the monetary accumulation in Berlin would be used for the same purpose.

The further this process went, the more popular the French government would be with the great leaders of French industry. It would solve the old age-long struggle for mastery between French iron and German coke. That the Germans would have to submit is very clear. They would have no option. The French would thereby become complete masters of the all-European iron and steel trust, and, as such, Britain's most deadly industrial rivals. It would be a serious matter for Germany if the French then decided on a price-cutting war.

That this is no fantastic dream may be seen when one considers that the French government has the strongest political reasons for wanting to have as much voice as possible in the management of German railways. Whoever holds Germany's railways holds Germany militarily as well. It is not suggested that one man, one high official, is capable of standing up against the public opinion of the world and overriding the stubborn opposition of the German public. All that he would have to do would be to keep a vigilant eye on what is to be transported, and no preparation for war could ever be begun.

Further German criticism says: "It is therefore to be assumed that the 52 per cent of the bonds handed to the French government will be kept intact. With that Germany practically becomes a vassal of France, while industrially her absorption is only a matter of time. We shall in the end have to face a rival far more powerful than France or Germany alone. Can we afford it?"

It is almost needless to point out that all this propaganda is inspired with the one idea of making the situation as difficult as possible, but in reality it does not appear likely that it will have much effect, and it is looked upon as an outburst of spleen which might as well have been left out of the argument.

Five Passengers Killed on L. M. & S.

A rear collision of passenger trains on the London, Midland & Scottish Railway near Euston terminus, in London, on the morning of April 26, which resulted in the death of five passengers and the injury of 68, was due to the simplest possible cause; the signalman at fault explained that, when watching a departing train, which had just started from his station, "for some obscure reason I had it clearly in my head that the train was traveling on the up slow road;" when in fact it was on the (parallel) up fast track. Two up (inbound) trains had been stopped, side by side, at the home signals, almost opposite the signal cabin; and after the train on the fast line had moved forward the signalman, ignoring the train still standing on the slow line, permitted the next station in the rear (Camden) to send on another train on that track.

The cabin is under a long and wide highway bridge, and there are masonry pillars between the tracks, in some places; but, according to the report, the signalman had a full view of the trains. Indeed, this fact is given as an explanation of why track-circuit locking had not been introduced. The interlocking in this cabin is electric and the levers for the fast tracks are in a separate frame above the levers applying to the slow line. The signalman, who was assisting the regular signalman because of heavy traffic, was familiar with the cabin having worked in it occasionally as relief. He has an excellent record and character, having been selected after eight years' service as a signalman by reason of his marked ability.

Colonel J. W. Pringle, who makes the report, says that "track curcuiting is perhaps the best preventive." Track circuiting is already in use at this place, on some of the tracks, but "it would not normally be called for by an inspecting officer for trains standing as they were in this case, practically in front of the signal box." But, in view of this occurrence, "there is a case for reconsidering the necessity for track circuiting," and he recommends it.

THE 58 TRAINS of the New York Central which pass through New Carlisle, Ind., daily will slacken speed to eight miles an hour while within that city in conformity with a new ordinance, adopted when the road refused to eliminate a grade crossing.

Equipment and Supplies

Locomotives

THE SAN ANTONIO & ARANSAS PASS has ordered 5, 4-4-0 type locomotives from the Baldwin Locomotive Works.

THE ANGELINA COUNTY LUMBER COMPANY has ordered one Mikado type locomotive from the Baldwin Locomotive Works.

THE SOUTHERN RAILWAY is inquiring for 25 Mikado type locomotives, 15 Pacific type and 10, 8-wheel switching type locomotives.

THE DETROIT, TOLEDO & IRONTON, reported in the *Railway Age* of February 9 as inquiring for 4, 8-wheel switching type locomotives, has ordered 6, 8-wheel switching type locomotives from the Lima Locomotive Works.

THE CHESAPEAKE & OHIO has given a contract to the American Locomotive Company for repairing 25 Mallet type locomotives. This work will be carried out at Dunkirk, N. Y. It is reported that arrangements have been made with the Newport News Shipbuilding & Dry Dock Co. for making repairs to 24 Consolidation type locomotives and 24 Mallet type locomotives.

Freight Cars

THE GREAT NORTHERN is inquiring for 600 40-ton and 100 50-ton automobile cars.

THE CENTRAL VERMONT has given an order to the American Car & Foundry Company to repair 300 box cars.

THE SOUTHERN RAILWAY is inquiring for 2,500 box cars of 40 tons' capacity, 250 stock cars of 40 tons' capacity, and 250 flat cars of 50 tons' capacity.

THE ULEN CONTRACTING COMPANY, New York and Chicago, is inquiring for 10 flat cars, 5 box cars, 10 gondola cars and 5 stock cars for export to Bolivia.

THE NATIONAL RAILWAYS OF MEXICO have ordered 200 standard gage tank cars of 10,000 gal. capacity and 50 narrow gage tank cars from the General American Tank Car Corporation. An order has also been given for 50 gondola cars to the General American Car Company.

THE GREAT NORTHERN has asked for bids until September 18 for 600 steel underframes for 40-ft. box cars, of 50 tons' capacity. This company, reported in the *Railway Age* of August 16 as inquiring for 20 oil tank cars, has given an order to the Standard Tank Car Company for 20 tank cars, of 12,500 gal. capacity.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of August 23 as inquiring for 4,000 gondola cars of 50 tons, 2,000 box cars of 40 tons and 200 stock cars of 40 tons has ordered 1,000 gondolas from the Pullman Car & Manufacturing Corporation Company, 1,000 from the Pressed Steel Car Company, 1,000 from the General American Car Company, 500 from the Ryan Car Company and 500 from the Mt. Vernon Car Manufacturing Company, 1,000 box cars from the American Car & Foundry Company, and 1,000 box cars from the Standard Steel Car Company. This company has also ordered 200 stock cars from the American Car & Foundry Company.

Passenger Cars

THE ATCHISON, TOPEKA & SANTA FE expects to come into the market soon for some passenger equipment.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered from the J. G. Brill Company one gasoline-electric car.

THE ERIE has ordered 8 combination passenger and baggage gasoline motor cars, from the J. G. Brill Company.

THE SOUTHERN RAILWAY is inquiring for 25 steel passenger coaches, 10 combination baggage and express cars and 3 dining cars.

THE PUNXIANA COAL & COKE COMPANY has ordered one combination passenger and baggage gasoline motor car, from the J. G. Brill Company.

THE ULEN CONTRACTING COMPANY is inquiring for 7 passenger cars, 2 dining cars, 2 sleeping cars, 1 private car and 1 combination baggage and mail car, for use in Bolivia.

THE MISSOURI-KANSAS-TEXAS has ordered one combination passenger and baggage gasoline motor car and one passenger trailer car from the J. G. Brill Company.

Iron and Steel

THE ILLINOIS CENTRAL reported in the *Railway Age* of August 30 as about to enter the market for 60,000 tons of rail, has ordered 20,000 tons from the Tennessee Coal, Iron & Railroad Company, 25,000 from the Illinois Steel Company and 15,000 from the Inland Steel Company.

Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC is expected to enter the market soon for equipment for its new machine shop at Shawnee, Okla.

THE DELAWARE, LACKAWANNA & WESTERN asked for bids recently for about 5 machine tools for use at its Keyser Valley, Scranton and East Buffalo shops. The tools include a car wheel lathe and a high duty drilling machine.

Miscellaneous

THE LEHIGH VALLEY has ordered from the Conveyers Corporation of America, Chicago, an American steam jet cinder conveyor for its terminal power house at Perth Amboy, N. J.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered from the Conveyors Corporation of America, Chicago, an American steam jet cinder conveyor for its Shelby street plant, Indianapolis, Ind. This is the third steam jet cinder conveyor system installed by this road.

THE CHESAPEAKE & OHIO has given an order to the New York Shipbuilding Corporation for a new steel car float, to have a capacity of 32 cars. The cost of the float will be $138,500. A contract has been given to the Newport News Shipbuilding & Dry Dock Co. to build 2 freight house barges at a cost of $18,800 each. This equipment will be placed in service between Newport News, Va., and Norfolk.

Signaling

THE WESTERN PACIFIC has ordered from the Union Switch & Signal Company, 102 one-arm two-position Style "B" semaphore signals to be installed on its line between Alazon, Nev., and Wesso, Nev., 178 miles. This is the section over which the lines of the Southern Pacific and the Western Pacific are operated jointly as a double-track railroad. At Wesso, the western terminus of this double track line, Style "M" low voltage switch and lock movements will be used for operating seven switches and derails from an interlocked circuit-controller, while at Alazon, the eastern end of the territory, six switches and derails will be operated by the same means.

THE MEMPHIS TERMINAL of the Missouri Pacific on September 1 completed its second consecutive month with a perfect record for passenger train performance. The Illinois division also reports every train on time during August. The Kansas City terminal dealt with 1,116 trains with only six behind their schedules or 99.5 per cent perfect. On the Missouri Pacific system as a whole, 96.2 per cent of the 11,781 passenger trains operated during August were on time.

Supply Trade News

J. E. Lawrence, district manager of the **LeMoyne Steel Company,** with headquarters at Cleveland, Ohio, has been transferred to Chicago.

The Ohio Brass Company, Mansfield, Ohio, has moved its Philadelphia, Pa., office from the Witherspoon building to 1404 Packard building at Fifteenth and Chestnut streets.

Frank A. Wilch, of the **Triumph Electric Company,** Cincinnati, Ohio, who has been associated with the Cleveland office, has been placed in charge of that territory. He succeeds Edward S. Ford.

B. N. Broido, who has been doing special consulting work for the **Superheater Company,** of New York and Chicago, has recently been appointed chief engineer of the industrial department of the company.

Clayton R. Burt, president and general manager of the Austin Machinery Corporation, Chicago, has been elected general manager of the **Pratt & Whitney Company,** Hartford, Conn., to succeed Bryant H. Blood, resigned.

The National Railway Appliance Company of New York, with offices at Boston and Washington, and the **Hegeman-Castle Corporation** of Chicago, have been appointed general sales agents of the **Walter Tractor Snow-plow.**

J. C. Shepherd has been appointed assistant general manager of sales of the **Kansas City Bolt & Nut Company,** with headquarters at Kansas City, Mo., and **J. W. Anderson** has been appointed assistant general manager of sales.

E. R. Mason, 1845 Grand Central Terminal, New York City, has been appointed district sales manager, in charge of sales in all the New England states, also in New York, New Jersey, Pennsylvania and Delaware, for **Fairmont Railway Motors, Inc.,** Fairmont, Minn., manufacturers of section gang and inspection motor cars.

The E. L. Essley Machinery Company, Chicago, has taken over the exclusive agency in the Chicago and Milwaukee districts for the sale of the line of milling machines manufactured by the **Rockford Milling Machine Company,** Rockford, Ill., and the Sundstrand stub lathes and the Sundstrand manufacturing lathes made by the **Rockford Tool Company,** Rockford, Ill.

Percy M. Brotherhood, first vice-president of **Manning, Maxwell & Moore, Inc.,** New York, is now consulting engineer; **Frank J. Baumis,** works manager of the Putnam Machine Company at Fitchburg, Mass, has been appointed vice-president of Manning, Maxwell & Moore, Inc., in charge of the machinery department, with headquarters at New York, and **Augustus Wood** who was chief engineer is now works manager of the Putnam Machine Company, with headquarters at Fitchburg.

The Waugh Draft Gear Company, Peoples Gas building, Chicago, manufacturer of draft gears and buffing devices, has been reorganized and its name has been changed to the **Waugh Equipment Company. J. M. Waugh,** president of the Waugh Draft Gear Company, has been elected chairman of the board of directors of the Waugh Equipment Company and **A. J. Tizzini,** president of the Railway Improvement Company, New York, has also been elected president of the Waugh Equipment Company.

The Borg & Beck Company, Chicago, manufacturers of clutches for automobiles, has acquared all the capital stock of the **A. L. Norton, Inc.,** with a plant at Boston, and its subsidiary, the A. L. Norton, Ltd., which has a plant at Coaticook, Can., which company manufactures ball bearings and other kinds of jacks for railroads, bridges, and construction work. **Harry Norton,** president of A. L. Norton, Inc., and A. L. Norton,

Ltd., will continue at the head of both companies. All directors of the Borg & Beck Company were elected to the board of the Norton Companies.

A profit of $599,672 for the year ending June 30 last was made by the **Canadian Locomotive Company** at Kingston, Ont., according to the report submitted at the annual meeting. This compares with a loss of $52,665 last year. The aggregate profit for the past 13 years was $5,792,152, or an average yearly profit of $445,550. Carried forward into the current year are unfilled orders valued at about $1,750,000. **C. Bermingham** was elected to the vacancy on the board of directors caused by the death of Warren Y. Soper, of Ottawa. The old board was re-elected and the quarterly dividend of 1¾ per cent on preferred and 1 per cent on common stock was declared.

The Ryan Car Company, Chicago, heretofore controlled by James M. Hopkins, president of the Ryan Car Company and chairman of the board of directors of the Camel Company, and W. W. Darrow, vice-president of the Camel Company, has been acquired by a syndicate headed by **John M. Burnham & Company,** Chicago. **William M. Ryan,** formerly president of the Ryan Car Company and president of the Youngstown Steel Car Company, Niles, Ohio, has been elected president of the new company and **R. D. Bartlett** will continue as secretary-treasurer and assistant to the president. **T. H. Goodnow,** vice-president of the Ryan Car Company, has resigned to become vice-president of the Camel Company, with headquarters at Chicago.

A. M. Castle & Company, Chicago, iron and steel jobbers and mill representatives, have taken over the business of the **Berger & Carter Company,** San Francisco, Cal., jobbers of iron and steel, who have been in business there for 21 years. The Berger & Carter Company organization will continue in the operation of the business and **R. L. Sanford,** vice-president and representative of A. M. Castle & Company for 17 years, at San Francisco, will continue his interest in the management at San Francisco. The present warehouse site of the Berger & Carter Company, at Seventeenth and Mississippi streets, will be retained, while plans are being perfected for the purchase of a tract of land upon which will be erected a new steel warehouse.

P. R. Dreninger has been retained by the **Rogatchoff Company,** Baltimore, Md., as consulting engineer and as sales manager in southern territory. Mr. Dreninger was born at York, Pa., in 1891; he is a graduate of the Baltimore Polytechnic. After serving as draftsman for the Baltimore Car & Foundry Co., he spent 11 years in the engineering and sales departments of the T. H. Symington Company. In July, 1923, he became vice-president of the Boyden Steel Corporation, in charge of engineering and sales. In July, 1924, he resigned to engage in consulting engineering with offices at 902 Standard Oil building, Baltimore, where he is now located. He will continue as consulting engineer for the Boyden Steel Corporation, in addition to his duties with the Rogatchoff Company, in marketing the Rogatchoff crosshead adjustment.

Census of the Car Industry

The Department of Commerce announces that, according to the data collected at the biennial census of manufactures, 1923, there was a large increase in the manufacture of railroad cars, both steam and electric, in 1923 as compared with 1921, the last preceding census year.

The establishments engaged primarily in the manufacture of railroad cars (steam and electric) in 1923 produced 1,837 steam-railroad passenger cars, valued at $40,252,394; 164,969 steam-railroad freight and other non-passenger cars, valued at $329,672,548, 2,767 electric-railroad passenger cars, valued at $25,695,757; and 115 freight and other non-passenger electric railroad cars, valued at $488,956; together with other products to the value of $207,485,686; making a total of $603,595,341, an increase of 77.2 per cent as compared with $340,536,225 in 1921.

The combined number of cars manufactured by both classes of establishments advanced from 54,033 in 1921 to 169,688 in 1923, the rate of increase being 214 per cent; and their combined value increased from $186,903,128 to $396,109,655; at the rate of 111.9 per cent. In addition, cars, parts, and repairs are made to some extent by steam and electric-railroad repair shops and by a few establishments engaged primarily in other industries. The number and value of cars and the value of parts and repairs made in such establishments in 1921 was reported as follows: 5,230 steam-railroad cars valued at $13,722,001, 179 electric-railroad cars valued at $1,313,827, and parts and repairs valued at $330,576. The corresponding figures for 1923 have not yet been ascertained, but will be shown in the final reports of the present census.

Of the 138 establishments reporting for 1923, 130 were engaged primarily in the manufacture of steam-railroad cars and 8 in the manufacture of electric-railroad cars. The 130 establishments in the former class were located as follows: 29 in Illinois, 14 in Pennsylvania, 12 in Indiana, 11 in Ohio, 8 in New York, 7 each in Kansas and Missouri, 4 each in California, and Texas, 3 each in Delaware, Iowa, New Jersey, and Oklahoma, and the remaining 22 in Alabama, Florida, Georgia, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, Oregon, Tennessee, Virginia, Washington, West Virginia, and Wisconsin. The 8 establishments engaged primarily in the manufacture of electric-railroad cars were located as follows: 2 each in Missouri and Ohio, and 1 each in Illinois, Massachusetts, North Carolina, and Pennsylvania. In 1921 this industry was represented by 10 establishments, the decrease to 8 in 1923 being accounted for by the facts that 1 establishment went out of business prior to the

STEAM-RAILROAD CARS—GENERAL STATISTICS FOR THE INDUSTRY, 1923 AND 1921

	1923	1921	Per cent of increase
Number of establishments	130	108	20.4
Wage earners (average number) [a]	76,438	45,121	69.4
Maximum month	Aug. 80,410	Jan. 64,254	....
Minimum month	Dec. 69,759	Sept. 33,705	....
Per cent of maximum	86.8	52.5	....
Wages	$123,047,237	$67,745,689	81.6
Paid for contract work	$154,479	$2,943	5149.0
Cost of materials (including fuel)	$395,897,908	$204,057,950	94.0
Products, total value	$574,521,279	$325,680,157	76.4
Value added by manufacture [b]	$178,629,371	$121,622,207	46.9
Horsepower	240,162	(c)	....
Coal consumed (tons of 2,000 lbs.)	925,823	(c)	....

[a] Not including salaried employees and proprietors and firm members. Statistics for these classes will be given in final report. [b] Value of products less cost of materials. [c] Not reported.

STEAM-RAILROAD CARS—GENERAL STATISTICS FOR THE INDUSTRY, 1923 AND 1921

	1923	1921	Per cent of increase [a]
Number of establishments	8	10	....
Wage earners (average number) [b]	3,978	2,912	36.6
Maximum month	Nov. 4,838	Jan. 3,598	....
Minimum month	Jan. 3,271	Dec. 2,304	....
Per cent of maximum	67.6	64.0	....
Wages	$5,880,773	$3,199,145	83.8
Cost of materials (including fuel)	$17,312,194	$7,880,405	119.7
Products, total value	$29,074,062	$14,856,068	95.7
Value added by manufacture [c]	$11,761,868	$6,975,663	68.6
Horsepower	10,028	(d)	....
Coal consumed (tons of 2,000 lbs.)	44,630	(d)	....

[a] Per cent not computed where base is less than 100. [b] Not including salaried employees and proprietors and firm members. Statistics for these classes will be given in final report. [c] Value of products less cost of materials. [d] Not reported.

NUMBER AND VALUE OF CARS MADE, STEAM AND ELECTRIC, 1923 AND 1921

	1923	1921	Per cent of increase [a]
Total value	$603,595,341	$340,536,225	77.2
Steam-railroad cars:			
Number	166,806	52,613	217.0
Value	$369,924,942	$176,774,656	109.3
Passenger:			
Number	1,837	1,348	36.3
Value	$40,252,394	$34,190,789	17.7
Freight and other varieties:			
Number	164,969	51,265	221.8
Value	$329,672,548	$142,583,867	131.2
Electric-railroad cars:			
Number	2,882	1,420	103.0
Value	$26,184,713	$10,128,472	158.5
Passenger:			
Number	2,767	1,358	103.8
Value	$25,695,757	$9,525,402	169.8
Freight and other varieties:			
Number	115	62	85.5
Value	$488,956	$603,070	—18.9
All other products, value [b]	$207,485,686	$153,633,097	35.1

[a] A minus sign (—) denotes decrease. [b] Includes value of rebuilt cars.

beginning of 1923 and that another was engaged during that year primarily in the manufacture of steam-railroad cars.

The statistics for 1921 and 1923 are presented, for the United States as a whole, in the three accompanying tables. (The figures for 1923 are preliminary and subject to such correction as may be found necessary upon further examination of the returns.) The first table gives "general statistics" for the steam-railroad car industry; the second presents similar statistics for the electric-railroad car industry; and the third shows the number and value of the various types of cars made in both industries. The difference between the total values of products shown in the first two tables and the total values of steam-railroad cars and electric-railroad cars, respectively, as given in the third table is due to the fact that some of the establishments engaged primarily in the manufacture of steam-railroad cars also made a few electric-railroad cars, while certain plants which are classified in the electric-railroad car industry also build some steam-railroad cars. The item "all other products" in the third table is made up in part of the value of rebuilt cars and in part of the value of miscellaneous products from both industries.

Trade Publications

CINDER CONVEYORS.—The Conveyors Corporation of America, Chicago, has issued a new booklet describing its steam jet cinder conveying equipment. The description is chiefly devoted to the use of this equipment at terminal cinder pits and includes photographs and drawings to show the manner of installation and operation, as well as the general appearance and arrangement. Reference is also made to experience had with the equipment.

WABASH
1884
WABASH
SANTA CLAUS ABANDONS HIS REINDEER
FOR THE GREAT
WABASH ROUTE
The Fastest, Safest and Most Popular Line between all points
NORTH, EAST, WEST AND SOUTH.
BE SURE YOUR TICKETS READ VIA THE WABASH.

A Brilliant Four-Color Poster of the Eighties

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company has awarded a contract to the Sumner Sollitt Company, Chicago, for the construction of a three-story ice manufacturing and storage plant at Winslow, Ariz., reported in the *Railway Age* of May 24.

BALTIMORE & OHIO.—This company has awarded a contract to the American Bridge Company covering the fabrication of steel work for two new spans in a railroad bridge at Opequon, near Martinsburg, W. Va. Approximately 100 tons of steelwork is involved in this order.

BALTIMORE & OHIO.—This company has awarded a contract to the Seaboard Construction Company, for the construction of three small bridges, one each on its Mt. Clare branch, its Relay branch and its Curtis Bay branch—all near Baltimore, Md. The work will cost approximately $65,000.

CAPILANO TIMBER COMPANY.—This company plans the construction of an extension of its standard-gage logging road in British Columbia, from the present end of track on the north shore of Burrard Inlet to a connection with the Pacific Great Eastern at Squamish, a distance of 16 miles.

CENTRAL OF GEORGIA.—This company has awarded a contract to the Claussen-Lawrence Construction Company, Augusta, Ga., for the construction of a passenger station with shelter sheds at Opelika, Ala.

CENTRAL OF GEORGIA.—This company has awarded a contract to the Claussen-Lawrence Construction Company, Augusta, Ga., for the construction of a passenger station at Opelika, Ala., reported in the *Railway Age* of September 6.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the installation of automatic electric hoists in electrifying the present coaling station at Fillmore, Ind., and Dayton, Ohio.

KANSAS CITY SOUTHERN.—This company is calling for bids for the construction of an eating house at Watts, Okla.

MISSOURI PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension of the Eudora branch from Epps to Delhi, La., 10 miles.

NEW YORK CENTRAL.—This company has awarded a contract to Louis Chevalier, Inc., for the elimination of grade crossings at Main and Wildey streets, Tarrytown, N. Y., to cost $227,000. Grade crossings at Court street, Town Line road and Hazelhurst avenue, East Syracuse, N. Y., will be eliminated at a cost of $59,000 by Wm. M. Ballard. A contract has been awarded to the Walsh Construction Company for grade revision and elimination of grade crossings between Ridgefield Park, N. J., and Teaneck on the company's West Shore line to cost approximately $300,000.

NEW YORK, NEW HAVEN & HARTFORD.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the construction of an automatic electric, reinforced concrete coaling plant at Maybrook, N. Y.

NUECES VALLEY, RIO GRANDE & GULF.—The Interstate Commerce Commission has denied this company's application for a certificate authorizing the construction of a new line of railroad from Beeville to Laredo, Tex., about 135 miles, stating that "the absence for most of the route of definite surveys, the proposed method of financing, the introduction of a construction company of unknown functions, which would probably include the right to locate the line, and the intention or desire to have the line operated by another company, are circumstances that tend to cause doubt as to the probability that the road would be well located or well constructed."

Railway Financial News

CHICAGO & ALTON.—*Interest.*—Charles A. Peabody, chairman of the protective committee representing the holders of the 3 per cent fifty-year gold bonds, announced Wednesday that the receivers have paid on 3 per cent bonds the interest which became due April 1, with interest at 6 per cent.

Depositors are expected to present their certificates of deposit promptly to the New York Trust Company, depositary, or to the Illinois Merchants Trust Company, Chicago, sub-depositary. Those who have not received an advance on April 1 interest will then receive such interest with interest thereon at 6 per cent. As the company is about to default in payment of the October 1 interest, any depositor who so requests may at any time on or before October 1 receive an advance on the October 1, 1924, interest.

CHICAGO, PALATINE & WAUCONDA.—*Receiver Appointed.*—H. M. Detrick of Wauconda, Ill., has been appointed receiver. The receivership follows the application of Robert C. Kent, acting trustee since 1919. The alleged indebtedness approximates $150,000.

CHICAGO, ROCK ISLAND & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a line of 9.53 miles in Winn Parish, La.

CHICAGO, ROCK ISLAND & PACIFIC.—*Notes.*—The Interstate Commerce Commission has authorized an issue of $5,000,000 of five year 5 per cent secured gold notes to be sold at not less than 97½; also the pledge of first and refunding mortgage bonds as collateral to an amount equal in market price to 120 per cent of the face value of the notes.

Abandonment.—The Interstate Commerce Commission has authorized the abandonment of a line from a point near Coalgate to Lehigh, Okla., 4.94 miles.

COLORADO & SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has again postponed, from September 11 to October 11, the effective date of its certificate authorizing this company to abandon a branch line, at the request of the state of Colorado which proposes to test the validity of the certificate in the Supreme Court of the United States.

DELAWARE & HUDSON.—*Bonds.*—The Interstate Commerce Commission has vacated its order of November 2, 1920, authorizing this company to issue $3,475,000 of first and refunding mortgage 4 per cent bonds, and has authorized the company to procure the authentication and delivery of $4,600,000 of first and refunding mortgage bonds and to pledge all or part of them until December 31, 1926 as collateral for short term notes.

DULUTH, SOUTH SHORE & ATLANTIC.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of $440,000 of equipment trust certificates to be sold at not less than 98.

LOUISVILLE & NASHVILLE.—*Bonds.*—The Interstate Commerce Commission has authorized the authentication and delivery of $17,829,000 of first and refunding mortgage 4½ per cent bonds and the sale of $16,000,000 of them at not less than 91½.

MINNEAPOLIS & ST. LOUIS.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the receiver to abandon a line from Alaska to Le Beau, S. D., 12.56 miles.

MINNESOTA WESTERN.—*Acquisition and Securities.*—The Interstate Commerce Commission has authorized this company to acquire and operate the line formerly owned by the Electric Short Line, from Minneapolis to Lake Lillian, Minn., 85 miles; also to issue $1,500,000 of preferred stock and $135,000 of first mortgage 6 per cent 30-year bonds, in connection with the reorganization of the latter company.

MISSOURI-KANSAS-TEXAS.—*Fee Charges.*—Examiner Paca Oberlin of the Interstate Commerce Commission held a hearing in New York on September 15 on the reasonableness of proposed compensation of reorganization managers and counsel fees in connection with the reorganization of the Missouri-Kansas-Texas. The proposed fees totaled $2,364,249, of which $750,000 was for counsel fees. The hearing will be resumed on October 6.

NEW YORK CENTRAL LINES.—*Equipment Trust.*—The New York Central, the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis have applied to the Interstate Commerce Commission for authority for an issue of $20,955,000 of New York Central Lines 4½ per cent equipment trust certificates to be sold to J. P. Morgan & Co. at 96.89. The bankers have sold the notes at prices to yield 4.70 per cent for all maturities, plus accrued interest.

NORTHERN CENTRAL.—*Opposes Stock Sale.*—The Maryland Public Service Commission has passed an order instructing the Attorney General to file an injunction suit to restrain the Northern Central from disposing of 71,600 shares of its stock of a par value of $50. This case is to test the authority of the Maryland commission to compel the railroad to ask its permission before disposing of securities.

OAKGROVE & GEORGETOWN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon that part of its line from Harvey's Switch, in Mobile county, Ala., to Gibson, Miss., 12 miles.

PEORIA & PEKIN UNION.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of $3,200,000 of first mortgage 5½ per cent bonds to be sold at not less than 95.

READING COMPANY.—*Suit Dropped.*—The minority preferred stockholders have dropped the suit they filed in the Common Pleas Court several months ago for a ruling that they were entitled to dividends equal to those paid to common stockholders.

Dividends.—The Reading Company has declared the regular quarterly dividend of 2 per cent on the common, payable November 13, to stock of record October 20, and the regular quarterly 1 per cent on the second preferred, payable October 9 to stock of record September 23.

SOUTHERN ILLINOIS & MISSOURI BRIDGE COMPANY.—*Bonds Sold.*—Taylor, Ewart & Co., and the Continental & Commercial Trust & Savings Bank, Chicago, have sold $915,000 first mortgage 4 per cent gold bonds, due 1951, at a price of 79 and accrued interest to yield about 5.50 per cent. Interest on the bonds is guaranteed by the Illinois Central, the Missouri Pacific, the St. Louis & Southwestern, and the Chicago & Eastern Illinois.

TEXAS & PACIFIC-MISSOURI PACIFIC TERMINAL RAILROAD OF NEW ORLEANS.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $5,000,000 first mortgage 5½ per cent bonds to be guaranteed by the Texas & Pacific and the Missouri Pacific and to be sold to Kuhn, Loeb & Co., at 97½.

TEXAS & PACIFIC.—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue $4,400,000 of 6 per cent secured notes, in lieu of and to be exchanged for a note previously held by the director general of railroads and sold by him to Kuhn, Loeb & Co. Authority was also asked to pledge as collateral for the notes $5,500,000 of general and refunding mortgage 6 per cent gold bonds.

Dividends Declared

Chicago, North Shore & Milwaukee.—Preferred, 1½ per cent, quarterly; prior lien, 1¾ per cent, quarterly; both payable October 1 to holders of record September 15.

El Paso & Southwestern.—1¾ per cent, quarterly, payable October 2 to holders of record, September 25.

Joliet & Chicago.—1¾ per cent, quarterly, payable October 6 to holders of record September 25.

Philadelphia & Western.—Preferred, 1¼ per cent, quarterly, payable October 15 to holders of record September 30.

Southern Railway.—Common, 1¼ per cent, quarterly, payable November 1 to holders of record September 23. Preferred, 1¼ per cent, quarterly, payable October 15 to holders of record September 23.

West Jersey & Seashore.—Common, 2 per cent, semi-annually, payable October 15 to holders of record October 1.

Trend of Railway Stock and Bond Prices

	Sept. 16	Last Week	Last Year
Average price of 20 representative railway stocks	70.45	70.08	59.06
Average price of 20 representative railway bonds	87.86	88.05	81.95

Railway Officers

Executive

J. S. Pyeatt, president of the Gulf Coast Lines, has been elected also vice-president of the Houston & Brazos Valley.

T. M. Hayes has been appointed assistant to the president of the Wabash, with headquarters at St. Louis, Mo., a newly created position.

G. H. Walker has been elected chairman of the board of the International-Great Northern and **J. P. Ripley** has been elected vice-president, assistant secretary and assistant treasurer, both with headquarters at New York.

Operating

H. E. Coverston has been appointed assistant to the general manager of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, succeeding Hadley Baldwin, whose promotion to chief engineer was reported in the *Railway Age* of April 5.

C. A. Hodgman, whose promotion to superintendent of the Central division of the Minneapolis & St. Louis, with headquarters at Fort Dodge, Ia., was reported in the *Railway Age* of September 6, was born on September 12, 1889, at Aurora, Ill. He entered railway service in April, 1908, as a clerk in the office of the superintendent of transportation of the Chicago & North Western at Chicago. He entered the service of the Minneapolis & St. Louis in 1909 in the transportation department at Minneapolis and in 1910 was promoted to traveling car agent. Mr. Hodgman was promoted to chief clerk to the superintendent of car service on July 1, 1913, and held that position until March 23, 1914, when he was appointed chief clerk to the general superintendent. He was promoted to superintendent of car service in 1915 and two years later was promoted to superintendent of transportation. Mr. Hodgman was promoted to assistant superintendent of the Eastern division in August, 1920, and remained in that position until his recent promotion to superintendent of the Central division.

Traffic

P. E. Thomas has been appointed commercial agent for the Seaboard Air Line, at Lake Wales, Fla.

J. E. Billington has been appointed general agent of the Akron, Canton & Youngstown, with headquarters at Portland, Ore.

T. A. Morken has been appointed general agent, passenger department, of the Chicago, Milwaukee & St. Paul, with headquarters at St. Paul, Minn.

R. F. Atwood has been appointed general agent of the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., a newly created position.

N. J. Brennan has been appointed division freight agent of the Michigan Central, with headquarters at Detroit, Mich., succeeding **James Finlay,** promoted to assistant general freight agent.

J. W. Turner, district passenger agent of the Texas & Pacific, at Shreveport, La., has been appointed assistant general agent (freight and passenger), with the same headquarters.

W. D. McVey, assistant general freight agent of the Michigan Central, with headquarters at Detroit, Mich., has been appointed general freight and passenger agent of the Rutland, with headquarters at Rutland, Vt., succeeding F. O. Stafford, whose appointment as assistant freight traffic manager of the New York Central, with headquarters at Chicago, was reported in the *Railway Age* of August 23.

A. W. Aylin, division freight agent of the Missouri Pacific, with headquarters at Little Rock, Ark., has been promoted to assistant general freight agent, with the same headquarters. **W. B. Wier,** division freight agent, with headquarters at Pine Bluff, Ark., has been transferred to Little Rock, succeeding Mr. Aylin. **H. D. Reaves** has been appointed division freight agent at Pine Bluff, succeeding Mr. Wier.

O. R. Bromley, general freight agent of the Michigan Central, with headquarters at Detroit, Mich., has been promoted to freight traffic manager, with the same headquarters, a newly created position. **E. W. Brunck,** assistant general freight agent, with headquarters at Detroit, has been promoted to genreal freight agent, with the same headquarters, succeeding Mr. Bromley. **James Finlay,** division freight agent, with headquarters at Detroit, has been promoted to assistant general freight agent, with the same headquarters, succeeding Mr. Brunck. **W. C. Douglas,** assistant general freight agent, with headquarters at Chicago, has been promoted to assistant freight traffic manager, with the same headquarters, a newly created position.

Mechanical

D. H. Jenness, acting assistant road foreman of engines of the Fort Wayne division of the Pennsylvania, has been promoted to road foreman of engines of the Logansport division, with headquarters at Logansport, Ind., succeeding **T. E. McDonald,** who has been transferred to the office of the general superintendent of motive power at Chicago.

Engineering, Maintenance of Way and Signaling

P. B. Jeffries has been appointed chief engineer of the Alabama & Vicksburg, with headquarters at New Orleans, La.

W. J. Bergen, chief engineer and valuation engineer of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed engineering assistant to the president and valuation engineer, with the same headquarters, a newly created position. **J. K. Conner,** chief engineer of the Lake Erie & Western district, with headquarters at Indianapolis, Ind., has been appointed also chief engineer of the Nickel Plate district, with headquarters at Cleveland, succeeding Mr. Bergen. **A. C. Harvey,** assistant chief engineer of the Nickel Plate district, with headquarters at Cleveland, has been appointed also assistant chief engineer of the Lake Erie & Western district, with the same headquarters. **J. C. Wallace,** structural engineer of the Lake Erie & Western district, with headquarters at Indianapolis, has been promoted to district engineer, with the same headquarters, a newly created position.

Special

Paul W. Sweet has been appointed chief surgeon, in charge of the medical department, of the Newaukum Valley, with headquarters at Centralia, Wash.

Obituary

H. P. Hoey, assistant engineer of the Southern Pacific, on the construction of the Natron cut-off, died of apoplexy at Oakridge, Ore., on September 4.

William Aird, well-known in railway and locomotive circles in Canada, died at Barrie, Ont., last week. He was born in Scotland and received his early education in France. Coming to Canada with his father, who was employed in the construction of the Victoria bridge at Montreal, Mr. Aird entered the Point St. Charles (Montreal) shops of the Grand Trunk. Later he became shop foreman at Stratford, Ont.; then master mechanic. Later he resigned that position to become superintendent of the Canadian Locomotive Works at Kingston, Ont., a position he held until his retirement ten years ago.